BIOLOGICAL ASSESSMENT

for the

Spivack Property
Located in:

Clearlake Oaks
APNs 628-080-040, 628-090-030, 628-100-100
Lake County

Prepared for

Stuart Spivack
6430 North Regal Manor Drive
Tucson, AZ 85750

By

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SUMMARY

This Biological Assessment was prepared for Stuart Spivack on his properties located near Clearlake Oaks (please refer to *Figures 1-3*) on APNs 628-080-040, 628-090-030, and 628-100-100. The purpose of the Biological Assessment is to review the biological resources present, or potentially present, and to determine the potential impacts to the biological resources resulting from the development that has already taken place, as well as to provide mitigation for proposed projects.The Biological Assessment was prepared to meet the needs of county and state cannabis permitting processes. The document presents technical information upon which decisions regarding project impacts, mitigation, and remediation may be developed.

A Biological Assesment for special status animals, plants, and plant communities was conducted by NCRM Wildife Biologist Stephanie Martin, and Botanists Heather Morrison, Estelle Clifton, and Kerry Heise during spring and summer of 2019. The proposed project is to permit an existing cannabis farm with multiple places of use (POUs). The assessed area, or Project Area (PA), included the POUs, ponds, roads, and other disturbed areas on the property.

The Spivack PA has undergone recent grading to expand POUs. Multiple erosion sites were identified where remediation will result in encroachment work. To remediate sediment impacts associated with these activitie a Lake and Streambed Alteration Agreement is being recommended for submission to the California Department of Fish and Wildlife (CDFW) and a Cannabis Cultivation General Order Waste Discharge Requirement from the California Water Board.

Several existing on-stream reservoirs are within the PA, but are not used for consumption. These reservoirs should be registered with the California Water Regources Control Board, Division of Water Rights under a Small Domestic Use Registration for wildlife.

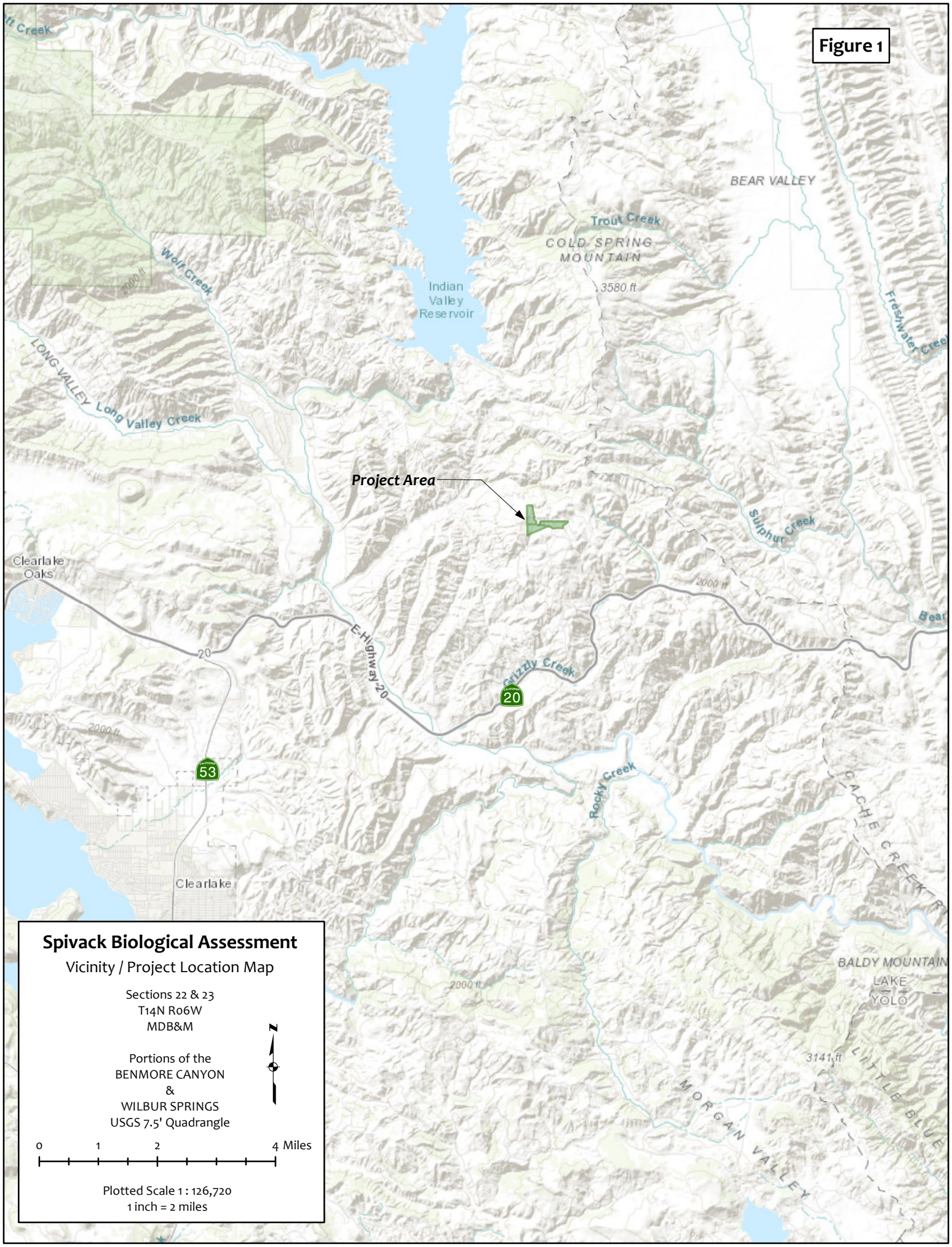
No special status species were identified within the Project Area. No special status plants or plant communities were identified within the Project Area. The watercourses and wetland areas mapped in *Figure 3* are treated as special status. Buffer zones required by the State Cannabis Order will protect these features.

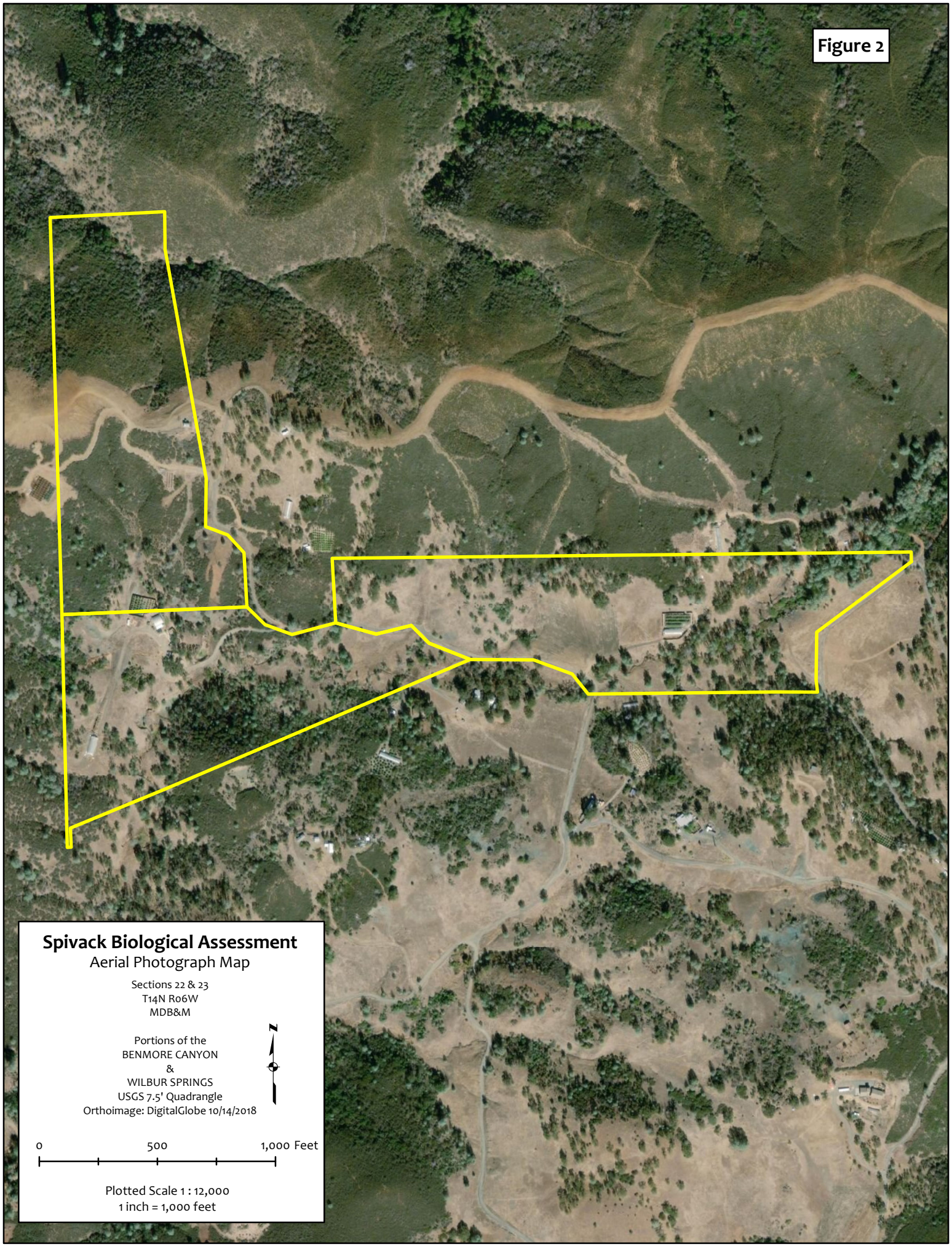
STUDY AREA DESCRIPTION

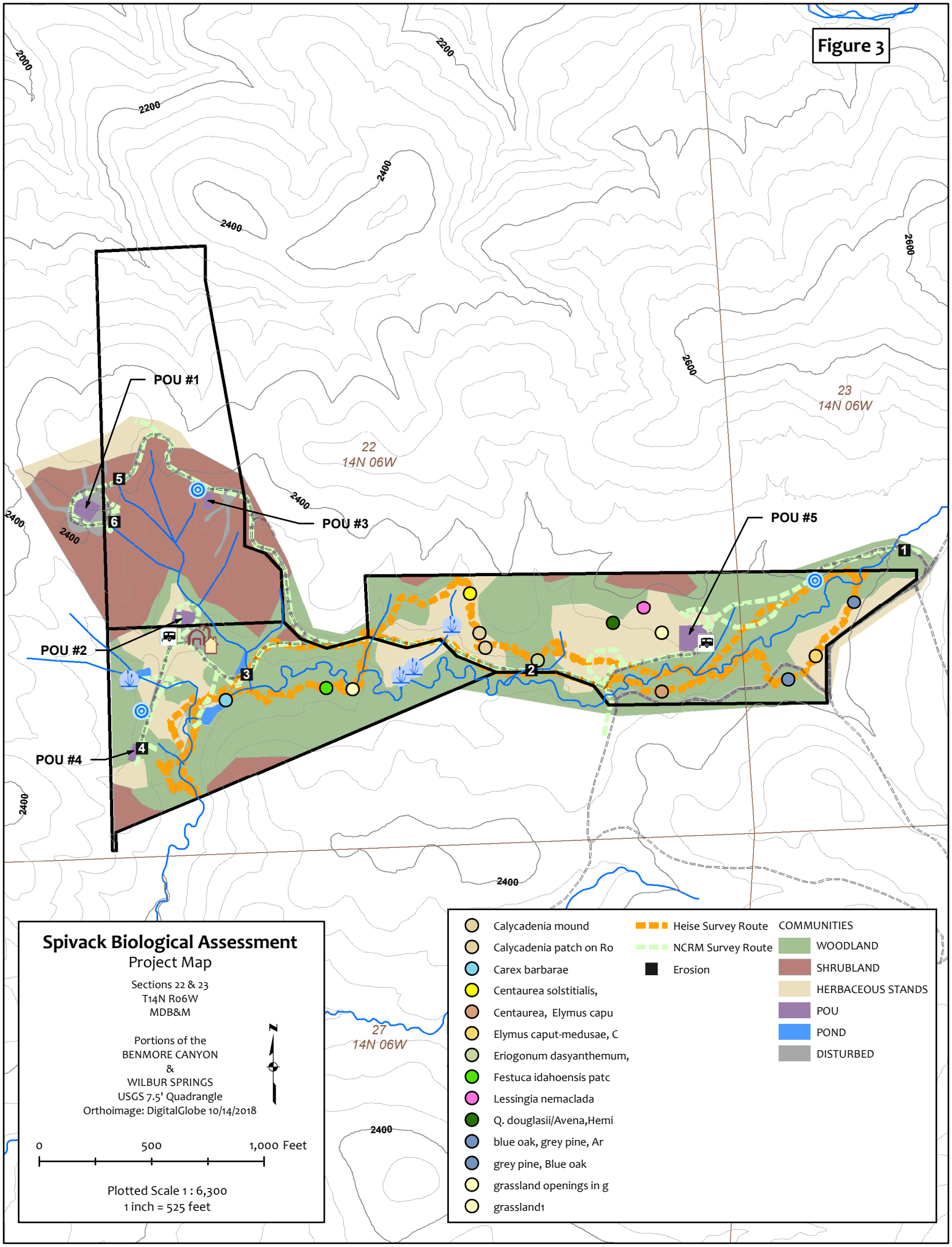
The Project Area, located primarily within the Benmore Canyon 7.5' USGS quadrangle, in Section 22, Township 14 North, Range 06 West, MDBM and is accessed off of Watertrough Road, approximately two miles north of Highway 20 in Clearlake, CA (please refer to *Figures 1-3*). The elevation is approximately 2,200 to 2,400 feet (670-743 meters) above sea level.

Indian Creek and a seasonal watercourse flow through the Project Area (PA). General habitat types within the PA include oak woodlands, chaparral, grassland, and ponds.

The USDA's Web Soil Survey indicates that the project area is underlaid by five soil types. Seventy percent of the PA contains the Henneke-Montara-Rock outcrop complex, 10 to 50 percent slopes. To the east there are patches of Skyhigh-Millsholm loams, 15-50 percent slopes. An area on the eastern end of the PA is Pomo-Bressa loams, 15-50 percent slopes. Small areas (less than 2 acres) on the western side of the PA contain Maymen-Etsel-Snook complex, 30-75 percent slopes, Millsholm-Squarock-Pomo complex, 30 to 50 percent slopes and Millsholm-Bressa loams, 30-50 percent slopes. See *Figure 4* in *Appendix D* for soils map and report.


Figure 1
Project Area
Indian Valley Reservoir
BEAR VALLEY
Trout Creek
COLD SPRING MOUNTAIN
3580 ft
Wolf Creek
Freshwater Creek
LONG VALLEY
Long Valley Creek
Sulphur Creek
Clearlake Oaks
20
E-Highway-20
Grizzly Creek
2000 ft
53
Rocky Creek
CACHE CREEK
Clearlake
BALDY MOUNTAIN
LAKE
YOLO
3141 ft
LITTLE BLUE
MORGAN VALLEY
Spivack Biological Assessment
Vicinity / Project Location Map
Sections 22 & 23
T14N R06W
MDB&M
Portions of the
BENMORE CANYON
&
WILBUR SPRINGS
USGS 7.5' Quadrangle
N
0 1 2 4 Miles
Plotted Scale 1 : 126,720
1 inch = 2 miles


Figure 2
Spivack Biological Assessment
Aerial Photograph Map
Sections 22 & 23
T14N R06W
MDB&M
Portions of the
BENMORE CANYON
&
WILBUR SPRINGS
USGS 7.5' Quadrangle
Orthoimage: DigitalGlobe 10/14/2018
N
0
500
1,000 Feet
Plotted Scale 1 : 12,000
1 inch = 1,000 feet


Figure 3
POU #1
POU #2
POU #3
POU #4
POU #5
22
14N 06W
23
14N 06W
27
14N 06W
2000
2200
2400
2600
1
2
3
4
5
6
Spivack Biological Assessment
Project Map
Sections 22 & 23
T14N R06W
MDB&M
Portions of the
BENMORE CANYON
&
WILBUR SPRINGS
USGS 7.5' Quadrangle
Orthoimage: DigitalGlobe 10/14/2018
N
0
500
1,000 Feet
Plotted Scale 1 : 6,300
1 inch = 525 feet
Calycadenia mound
Calycadenia patch on Ro
Carex barbarae
Centaurea solstitialis,
Centaurea, Elymus capu
Elymus caput-medusae, C
Eriogonum dasyanthemum,
Festuca idahoensis patc
Lessingia nemaclada
Q. douglasii/Avena,Hemi
blue oak, grey pine, Ar
grey pine, Blue oak
grassland openings in g
grassland1
Heise Survey Route
NCRM Survey Route
Erosion
COMMUNITIES
WOODLAND
SHRUBLAND
HERBACEOUS STANDS
POU
POND
DISTURBED

SURVEY METHODOLOGY AND DATES

The following agencies were consulted and/or their policies were considered in preparation of this Biological Assessment.

- California Department of Fish and Wildlife (CDFW)
- CalFlora
- California Cooperative Anadromous Fish and Habitat Data (CalFish)
- Lake County
- National Marine Fisheries Service (NMFS)
- U.S. Fish and Wildlife Service (USFWS)
- California Department of Forestry and Fire Protection (CALFIRE)

Scoping for listed species was performed by querying the California Native Plant Society (CNPS), U.S. Fish and Wildlife Service (USFWS), *California Natural Diversity Database* (CNDDB), and the *Spotted Owl Observations Database* (BIOS) for known occurrences of plant and wildlife species, listed as Federal or State Rare, Endangered, Threatened, or Species of Special Concern, within Benmore Canyon and Wilbur Springs 7.5' U.S.G.S. Quadrangle and the ten surrounding quadrangles (Bartlett Springs, Hough Springs, Leesville, Clearlake Oaks, Benmore Canyon, Wilber Springs, Clearlake Highlands, Lower Lake, Wilson Valley, Glascock Mtn., Salt Canyon, and Manor Slough). Also included in our species scoping were species listed as Sensitive by the Board of Forestry (under 14 CCR 895.1). The *California Cooperative Anadromous Fish and Habitat Data Program* (CalFish) was also reviewed for the presence of special status fish species and/or designated critical habitat for anadromous fish within or near the PA.

Sensitive, or special status, fish, wildlife, and botanical species are those listed as Rare, Endangered, Threatened, Sensitive, or Species of Special Concern, by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), California Department of Forestry (CDF), Bureau of Land Management (BLM), the U.S. Forest Service (USFS), or National Marine Fisheries Service (NMFS). The reported sensitive species are reviewed in more detail in *Table 1a. Sensitive Plant Species and Communities in the Vicinity of the Spivack Site* and *Table 1b. Sensitive Wildlife Species in the Vicinity of the Spivack Site.*

All plant species located during the surveys were identified to the lowest taxonomic level necessary to determine the presence of special status plant species. *The Jepson Manual: Vascular Plants of California* (Baldwin et al. 2012) was used to determine the taxonomic nomenclature. A complete vegetation list of the species observed during the site visits is included *Appendix B- Plant Species Identified During the Floristic Survey.*

A Manual of California Vegetation Second Edition (CNPS [2019] and Sawyer et al. 2009) was used to classify and describe representative plant communities present. For additional description of the plant communities present the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, R.F. (1986)) was also used.

A general biological site survey was conducted by NCRM biologist Stephanie Martin on July 19, 2019. Botanical surveys were conducted on April 24, 2019 by Heather Morrison, June 19, 2019 by Estelle Clifton, and July 18, 2019 by Kerry Heise. A general observation and visual search of the PA and the immediate vicinity was utilized to determine the botanical, fish, and wildlife species present, the potential for the listed sensitive species to occur, and any potential impacts to those biological resources. Surveys however are limited to the year, climate, and seasonal timing in which they were conducted.

Botanical surveying methods were based on *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018). An intuitively controlled, seasonally appropriate and floristic survey (see species observed *Appendix B*) was performed by walking the property and targeting areas with potential suitable habitat for special status plant species identified in *Table 1a*. See botanical survey route in *Figure 3*.

Wildlife survey coverage varied proportionately with special habitat elements. Walking-meandering transects for wildlife species were not mapped, but occurred along riparian and developed areas, searching for nest trees, cavities, plucking posts, white wash, pellets, trails, burrows, and scat. Special habitat elements examined included large trees, ponds, Indian Creek riparian area, and the seasonal stream channel. Wildlife species noted in *Appendix C*, were detected by observation, and in some cases, vocalizations.

Table 1a. Sensitive Plant Species and Communities in the Vicinity of the Spivack Site

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Plants				
Allium fimbriatum var. *purdyi* Purdy's onion	CNPS; 4.3 S3 G4G5T3	Perinnial bulbiferous herb; serpentinite, clay soil; chaparral and cismontane woodland; 300-600 meters	Apr-Jun	No-high elevation
Amsinckia lunaris bent-flowered fiddleneck	CNPS; 1B.2 S3 G3	Coastal bluff scrub, cismontane woodland, valley, and foothill grassland 3-500 meters	March-June	No-high elevation
Antirrhinium virga tall snapdragon	CNPS; 4.3 S3? G3?	Chaparral, lower montane coniferous forest; 100 - 2015 meters	June-July	Yes
Arctostaphylos manzanita ssp. *elegans* Konocti manzanita	CNPS;1B.3 S3 G5T3	Evergreen shrub; chaparral, cismontane woodland, lower montane conifer forest/ volcanic; 395 - 1615 meters	Jan-May (July)	Yes
Arctostaphylos stanfordiana ssp. *raichei* Raiche's manzanita	CNPS; 1B.1 S2 G3T2	Evergreen shrub; chaparral, lower montane coniferous forest (openings)/ rocky, often serpentinite; 450 - 1035 meters	February-April	Yes
Asclepias solanoana serpentine milkweed	CNPS; 4.2 S3 G3	Chaparral, cismontane woodland, lower montane coniferous forest/serpentinite; 230 - 1860 meters	May-July(Aug)	Yes
Astragalus breweri Brewer's milk-vetch	CNPS; 4.2 S3 G3	Annual herb; chaparral, cismontane woodland, medow and seeps, valley and foothill grassland (open, often gravelly); often serpentinite, volcanic; 90-730 meters	April-June	Yes
Astraalus clevelandii Cleveland's milk-vetch	CNPS; 4.3 S4 G4	Perennial herb; chaparral, cismontane woodland, riparian forest; serpentine seeps; 200-1500 meters	June-September	Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Astragalus rattanii var. *jepsonianus* Jepson's milk-vetch	CNPS; 1B.2 S3 G4T3	Annual herb; chaparral, cismontane woodland, valley and foothill grassland/ often serpentinite; 295 - 700 meters	March-June	Yes
Astragalus rattanii var. *rattanii* Rattan's milk-vetch	CNPS; 4.3 S4 G4T4	Chaparral, cismontane woodland, lower montane coniferous forest/ gravelly streambanks. 30-825 meters	April-July	Yes
Astragalus tener var. *ferrisiae* Ferris' milk-vetch	CNPS;1B.2 S1 G2T1	Annual herb; meandows and seeps, valley and foothill grassland; vernally mesic; 2 - 75 meters	Apr-May	No-high elevation
Atriplex depressa brittlescale	CNPS; 1B.2 S2 G2	Annual herb; alkaline, clay; chenopod scrub, meadows and seeps, playas, valley and foothill grasslands; vernal pools; 1-320 meters	Apr-Oct	No-high elevation
Balsamorhiza macrolepis big-scale balsamroot	CNPS; 1B.2 S2 G2	Chaparral, cismontane woodland, valley and foothill grassland/ sometimes serpentinite; 90 - 1555 meters	March-June	Yes
Brasenia schreberi watershield	CNPS; 2B.3 S3 G5	Rhizomatous herb aquatic; marshes and swamps/ freshwater; 30-2200 meters	June - September	Yes
Brodiaea rosea var. *rosea* Indian Valley brodiaea	CNPS; 3.1 S2 G2 State; Endangered	Bulbiferous herb; closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland,/ serpentinite; 335-1450 meters	May - June	Yes
Calochortus uniflorus pink star-tulip	CNPS; 4.2 S4 G4	Perennial bulbiferous herb; coastal prairie, coastal scrub, meadows and seeps, north coast coniferous forest; 10-1070 meters	April-June	Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Calycadenia micrantha small-flowered calycadenia	CNPS; 1B.2 S2 G2	Annual herb; chaparral, meadows and seeps (volcanic), valley and foothill grassland/ roadsides, rocky talus scree, sometimes serpentinite, sparsely vegetated areas; 5 - 1500 meters	June-September	Yes
Calyptridium quadripetalum four-petaled pussypaws	CNPS; 4.3 S4 G4	Annual herb; chaparral, lower montane coniferous forest; sandy or gravelly, usually serpentinite; 315-2040 meters	April-June	Yes
Calystegia collina ssp. *oxyphylla* Mt. Saint Helena morning glory	CNPS; 4.2 S3 G4T3	Chaparral, lower montane coniferous forest, valley and foothill grassland/ serpentinite; 279-1010 meters	April - June	Yes
Calystegia collina ssp. *tridactylosa* three-fingered morning glory	CNPS; 1B.2 S1 G4T1	Rhizomatous herb; chaparral, cismontane woodland / serpentinite, rocky gravelly, openings; 0-600 meters	April-June	No-high elevation
Carex hystericina bottlebrush sedge	CNPS 2B.1 S 2 G5	Wet prairies, swamps, calcareous seeps 220 – 1030 meters	May - June	Yes
Carex klamathensis klamath sedge	CNPS; 1B.2 S2 G2	Perennial rhizomatous herb; serpentinite; chaparral, cisnomtane woodland, meadows and seeps	June-July	No -low elevation
Carex scabriuscula siskiyou sedge	CNPS; 4.3 S4 G5?	Mesic, sometimes serpentine seeps; lower montane coniferous forest, meadows and seeps, upper montane coniferous forest, 710-2345 meters	May-July	Yes
Castilleja rubicundula ssp. *rubicundula* pink creamsacs	CNPS; 1B.2 S2.2 G5T2	Chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland/ serpentinite; 20 - 900 meters	April-June	Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Centromadia parryi ssp. *parryi* pappose tarplant	CNPS; 1B.2 S2 G3T2	Chaparral, coastal prairie, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic)/ often alkaline; 0 - 420 meters	May-November	No-high elevation
Centromadia parryi ssp. *rudis* Parry's rough tarplant	CNPS; 4.2 S3 G3T3	Annual herb; alkaline, vernally mesic; valley and foothill grassland; vernal pools; 0-100 meters	May-Oct	No-high elevation
Chlorogalum pomeridianum var. *minus* dwarf soaproot	CNPS; 1B.2 S3 G5T3	Bulbiferous herb; chaparral (serpentinite), 305 - 1000 meters	May-August	Yes
Clarkia gracilis ssp. *tracyi* Tracy's clarkia	CNPS; 4.2 S3 G5T3	Annual herb; chaparral (openings, usually serpentinite); 65-650 meters	April-July	Yes
Collomia diversifolia serpentine collomia	CNPS; 4.3 S4 G4	Annual herb; chaparral, cismontane woodland; serpentine, rocky gravelly; 200-600 meters	May-June	No- high elevation
Cordylanthus tenuis ssp. *brunneus* serpentine bird's beak	CNPS; 4.3 S3 G4G5T3	Annual, hemiparasitic herb; closed cone coniferous forest, chaparral, cismontane woodland; usually serpentinite; 305-915 meters	July-August	Yes
Cryptantha dissita serpentine cryptantha	CNPS; 1B.2 S2 G2	Annual herb; chaparral (serpentinite) 395 - 580 meters	April-June	No-high elevation
Cryptantha rostellata red-stemmed cryptantha	CNPS; 4.2 S3 G4	Annual herb; often gravelly, volcaniv openings; often roadsides; cismontatne woodland, valley and foothill grassland; 40-800 meters	April-June	Yes
Delphinium recurvatum recurved larkspur	CNPS; 1B.2 S2? G2?	Perennial herb; alkaline soil; chenopod scrub; cismontane woodland; valley and foothill grassland; 3-790 meters	March-June	Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Delphinium uliginosum swamp larkspur	CNPS: 4.2 S3 G3	Perennial herb; chaparral, valley and foothill grassland; serpentinite seeps; 340-610 meters	May-June	No-high elevation
Entosthodon kochii Koch's cord-moss	CNPS; 1B.3 S1 G1	Cismontane woodland (soil); 180 - 1000 meters	N/A	Yes
Eriastrum brandegeeae Brandegee's eriastrum	CNPS; 1B.1 S1 G1Q	Annual herb; chaparral, cismontane woodland/ volcanic; 425 - 840 meters	April-August	Yes
Eriastrum tracyi Tracy's eriastrum	CNPS; 3.2 S3, G3Q	Annual herb; open areas on shale or alluvium, open woodland, chaparral 760 – 2000 meters.	June-July	Yes
Erigeron greenei Greene's narrow-leaved daisy	CNPS; 1B.2 S3 G3	Chaparral (serpentinite or volcanic); 80 - 1005 meters	May-September	Yes
Eriogonum nervulosum Snow Mountain buckwheat	CNPS; 1B.2 S2 G2	Rhizomatous herb; chaparral (serpentinite), 300 - 2105 meters	June-September	Yes
Eriogonum tripodum tripod buckwheat	CNPS; 4.2 S4 G4	Perennial deciduous shrub; often serpentinite; chaparral and cismontane woodland; 200-1600 meters	May-Jul	Yes
Eryngium constancei Loch Lomond button-celery	CNPS; 1B.1 S1 G1 State: Endangered Federal; Endangered	Vernal pools; 460 - 855 meters	April-June	Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Erythranthe nudata bare monkeyflower	4.3 S4 G4	Annual herb; serpentinite seeps; chaparral and cismontane woodland; 200-700 meters	May-june	Yes
Extriplex jauquinana San Joaquin spearscale	CNPS; 1B.2 S2 G2	Annual herb; alkaline; chenopod scrub, meadows and seeps, playas, valley and foothill grassland; 1-835 meters	Apr-Oct	Yes
Fritillaria pluriflora adobe-lily	CNPS; 1B.2 S2S3 G2G3	Chaparral, cismontane woodland, valley and foothill grassland/ often adobe; 60 - 705 meters	February-April	Yes
Fritillaria purdyi Purdy's fritillary	CNPS; 4.3 S4 G4	Perennial bulbiferous herb; chaparral, cimontane woodland; lower montane coniferous forest; usually serpentinite; 175-2255 meters	March-June	Yes
Galium andrewsii ssp. *gatense* phlox-leaf serpentine bedstraw	CNPS; 4.2 S3 G5T3	Perennial herb; serpentinite, rocky soil; chaparral, cismontane woodland; lower montane coniferous forest; 150-1450 meters	Apr-Jul	Yes
Gratiola heterosepala Boggs Lake hedge-hyssop	CNPS; 1B.2 S2 G2 State; Endangered	Marshes and swamps (lake margins), vernal pools/ clay; 10 - 2375 meters	April-August	Yes
Harmonia hallii Hall's harmonia	CNPS; 1B.2 S2? G2?	Chaparral (serpentinite); 500 - 975 meters	April-June	Yes
Helianthus exilis serpentine sunflower	CNPS; 4.2 S3 G3	Annual herb; chaparral, cismontane woodland; serpentine seeps; 150-1525 meters		Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Hesperolinon adenophyllum glandular western flax	CNPS; 1B.2 S2S3 G2G3	Annual herb; chaparral, cismontane woodland, valley and foothill grassland/ usually serpentinite; 150 - 1315 meters	May-August	Yes
Hesperolinon bicarpellatum two-carpellate western-flax	CNPS; 1B.2 S2 G2	Chaparral (serpentinite); 60 - 1005 meters	May-July	Yes
Hesperolinon drymarioides drymaria-like western flax	CNPS; 1B.2 S2 G2	Annual herb; closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland/ serpentine; 100 - 1130 meters	May-August	Yes
Hesperolinon didymocarpum Lake County western flax	CNPS;1B.2 S1 G1 State; Endangered	Annual herb; chaparral, cismontane woodland, valley and foothill grassland/ serpentinite; 330 - 365 meters	May-July	No-high elevation
Hesperolinon sharsmithiae Sharsmith's western flax	CNPS; 1B.2 S2 G2Q	Chaparral / serpentinite; 270-300 meters	May-July	No-high elevation
Horkelia bolanderi Bolander's horkelia	CNPS; 1B.2 S1 G1	Perennial herb; chaparral, lower montane coniferous forest, meadows and seeps, valley and foothill grassland/ edges, vernally mesic areas; 450 - 1100 meters	(May) June-August	Yes
Imperata brevifolia California satintail	CNPS; 2B.1 S3 G4	Rhizomatous herb; chaparral, coastal scrub, Mojavean desert scrub, meadow and seeps, riparian scrub. 0-1215 meters	May - September	Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Lasthenia burkei Burke's goldfields	CNPS; 1B.1 S1 G1 State; Endangered Federal; Endangered	Meadows and seeps (mesic), vernal pools; 15 - 600 meters	April-June	Yes
Layia septentrionalis Colusa layia	CNPS;1B.2 S2 G2	Chaparral, cismontane woodland, valley and foothill grassland/ sandy, serpentinite; 100 - 1095 meters	April-May	Yes
Leptosiphon acicularis bristly leptosiphon	CNPS; 4.2 S4? G4?	Annual herb; chaparral, cismontane woodland, coastal prairie, valley and foothill grassland; 55-1500 meters	April-June	Yes
Limnanthes floccosa ssp. *floccosa* woolly meadowfoam	CNPS; 4.2 S3 G4T4	Annual herb found in chaparral, cismontane woodland, valley, and foothill grassland, vernal pool/vernally mesic; 60-1335 meters	March-May (June)	Yes
Lomatium hooveri Hoover's lomatium	CNPS; 4.3 S3 G3	Perennial herb; serpentinite, or rarely volcanic soils; chaparral and cismontane woodland; 300-885 meters	Apr-Jul	Yes
Lomatium repostum Napa Lomatium	CNPS; 4.3 S3 G3	Perennial herb; serpentinite soil; chaparral and cismontane woodland; 90-830 meters	Mar-Jun	Yes
Lupinus milo-bakeri Milo Baker's lupine	CNPS; 1B.1 S1 G1Q State; Threatened	Cismontane woodland (often along roadsides), valley and foothill grassland; 410 - 1320 meters	June-September	Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Lupinus sericatus Cobb Mountain lupine	CNPS; 1B.2 S2? G2?	Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest; 275 - 1525 meters	March - June	Yes
Malacothamnus hallii Hall's bush-mallow	CNPS; 3.3 S3 G3Q	Chaparral, coastal scrub; 10 - 760 meters	May-September (October)	Yes
Micropus amphibolus Mt. Diablo cottonweed	CNPS; 3.2 S3S4 G3G4	Broadleaved upland forest, chaparral, cismontane woodland, valley and foothill grassland/ rocky; 45 - 825 meters	March-May	Yes
Myosurus minimus ssp. *apus* little mousetail	CNPS; 3.1 S2 G5T2Q	Annual herb; valley and foothill grasslands, vernal pools (alkaline); 20 - 640 meters	March-June	Yes
Navarretia jepsonii Jepson's navarretia	CNPS; 4.3 S4 G4	Annual herb; serpentinite soil; chaparral, cismontane woodland, valley and foothill grassland; 175-855 meters	Apr-Jun	Yes
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	CNPS; 1B.1 S2 G4T2	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools/ mesic; 5 - 1740 meters	April-July	Yes
Navarretia leucocephala ssp. *pauciflora* few-flowered navarretia	CNPS; 1B.1 S1 G4T1 State; Threatened Federal: Endangered	Annual herb; vernal pools (volcanic ash flow); 400 - 855 meters	May-June	Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Navarretia leucocephala ssp. *plieantha* many-flowered navarretia	CNPS; 1B.2 State; Endangered Federal; Endangered S1 G4T1	Vernal pools (volcanic ash flow); 30 - 950 meters	May-June	Yes
Navarretia nigelliformis ssp. *nigelliformis* adobe navarretia	CNPS; 4.2 S3 G4T3	Annual herb; clan, sometimes serpentinite; valley and foothill grassland vernally mesic; vernal pools; 100-1000 meters	Apr-June	Yes
Navarretia nigelliformis ssp. *radians* shining navarretia	CNPS; 1B.2 S2 G4T2	Annual herb; sometimes clay soil; cismontane woodland, valley and foothill grassland, vernal pools; 65-1000 meters	(Mar)Apr-Jul	Yes
Navarretia paradoxinota Porter's navarretia	CNPS 1B.3 S2 G2	Annual herb; serpentinite, openings, vernally mesic, often drainages; meadows and seeps; 165-840 meters	May-Jun(Jul)	Yes
Orobanche valida ssp. *howellii* Howell's broomrape	CNPS; 4.3 S3 G4T3	Parasitic perennial herb; chaparral, serpentinite; 180-1740 meters	Jun-Sep	Yes
Piperia michaelii Michael’s rein orchid	CNPS; 4.2 S3 G3	Perennial herb; coastal bluff scrub, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest; 3-915 meters	April-Aug	Yes
Plagiobryoides vinosula wine-colored tufa moss	CNPS; 4.2 S2 G3G4	Moss; usually granitic rock or granitic soil along seeps and streams, sometimes clay; cismontante woodland, mojavean desert scrub, meandows adn seeps, pinyon and juniper woodland, riparian woodland; 30-1735 meters		Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Potamogeton zosteriformis eel-grass pondweed	CNPS; 2B.2 S3 G5	Annual herb aquatic; marshes and swamps (assorted freshwater); 0 - 1860 meters	June- July	Yes
Puccinellia simplex California alkali grass	CNPS; 1B.2 S2 G3	Chenopod scrub, meadows and seeps, valley and foothill grassland, vernal pools / alkaline, vernally mesic; sinks, flats and lake margins; 2-930 meters	March-May	Yes
Sedella leiocarpa Lake County stonecrop	CNPS; 1B.1 S1 G1 State; Endangered Federal; Endangered	Annual herb; cismontane woodland, valley and foothill grassland, vernal pools/ vernally mesic depressions in volcanic outcrops; 365 - 790 meters	April-May	Yes
Senecio clevelandii var. *clevelandii* Cleveland's ragwort	CNPS; 4.3 S3 G4?T3Q	Perennial herb; chaparral (serpentinite); 365-900 meters	Jun-Jul	Yes
Sidalcea keckii Keck's checkerbloom	CNPS; 1B.1 Federal; Endangered S2 G2	Cismontane woodland, valley and foothill grassland/ serpentinite, clay; 75-650 meters	April-May (Jun)	Yes
Sidalcea oregana ssp. *hydrophila* marsh checkerbloom	CNPS; 1B.2 S2 G5T2	Meadows and seeps, riparian forest/ mesic; 1100 - 2300 meters	(June) July-August	No-low elevation
Streptanthus barbiger bearded jewelflower	CNPS; 4.2 S3 G3	Annual herb; chaparral (serpentinite); 150-1070 meters	May-July	Yes

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Streptanthus brachiatus ssp. *hoffmanii* Freed's jewel-flower	CNPS; 1B.2 S2 G2T2	Perennial herb; chaparral, cismontane woodland/ serpentinite; 490 - 1220 meters	May-July	Yes
Streptanthes drepanoides sickle-fruit jewelflower	CNPS; 4.3 S4 G4	Annual herb; serpentinite soil; chaparral, cismontane woodland; lower montane coniferous forest; 275-1660 meters	Apr-Jun	Yes
Streptanthus hesperidis green jewel-flower	CNPS; 1B.2 S2 G2	Annual herb; chaparral (openings), cismontane woodland / serpentinite, rocky; 130-760 meters	May-July	Yes
Toxicoscordion fontanum marsh zigadenus	CNPS; 4.2 S3 G3	Perennial bulbiferous herb; chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, marshes and swamps; vernally mesic, often serpentinite; 15-1000 meters	April-July	Yes
Viburnum ellipticum oval-leaved viburnum	CNPS; 2B.3 S3? G4G5	Chaparral, cismontane woodland, lower montane coniferous forest; 215 - 1400 meters	May-June	Yes
Communities				
Clear Lake Drainage Resident Trout Stream	GNR SNR			Absent
Coastal and Valley Freshwater Marsh	S2.1 G3			Absent
Great Valley Mixed Riparian Forest	S2.2 G3			Absent
Northern Basalt Flow Vernal Pool	S2.2 G3			Absent
Norther Claypan Vernal Pool	S1.1 G1			Absent

Name (*Scientific*, Common)	**Status**	**Associated Habitat**	**Blooming period**	**Habitat In plan Area**
Northern Volcanic Ash Vernal Pool	S1.1 G1			Absent
Valley Needlegrass Grasssland	S3.1 G3			Absent
Wildflower field	S2.2 G2			Absent

Table 1b. Potential Sensitive Wildlife Species in the Vicinity of the Spivack Site.

Common Name	Scientific Name	Status	General Habitat	Microhabitat / Special Features	Breeding Season [Peak Activity]	Range/ County	Potential for Occurrence
Fish							
Clear Lake Hitch	*Lavinia exilicauda*	CT	Hitch migrate each spring, when adults make their way upstream in tributaries of Clear Lake to spawn before they return to the lake, usually after heavy rains. Eggs sink to the bottom after fertilization, where they become lodged among the interstices in the gravel. Eggs hatch after approximately 7 days and the larvae become free-swimming after another 7 days where they then move downstream quickly before the streams dry up. They are present mainly in inshore areas in spring and early summer. Juveniles in the shallower, nearshore environment feed primarily on the larvae and pupae of midges. The hitch switch to feeding on plankton after moving into the offshore limnetic habitat.	Clean, fine-to-medium gravel, and water temperatures from 14-18°C for spawning in intermittent streams. While in the nearshore environment, juveniles require vegetation for refuge from predators ~90 days post hatch.	Late winter	Found only in Clear Lake and tributaries of., Lake County	N
Sacramento Perch	*Anchoplites interruptus*	CSSC	Historically abundant predators throughout the Central Valley of California, where they occupied sloughs, lakes, and slow-moving rivers. Today they are rare in their native waters, but still exist in Clear Lake and Alameda Creek/Calaveras Reservoir.	Most often found in warm reservoirs and ponds where summer temperature range form 18-28°C.	Spawn from March through early August when water temperatures range from 18-29°C.	Clear Lake and Alameda Creek/ Calaveras Reservoir	N
Amphibians							
Foothill Yellow-Legged Frog	*Rana boylii*	CC, CSSC	Found in/near quiet permanent water of rocky streams, marshes, or ponds; damp woods/ meadows with rocky substrate. Occurs in woodland and forested sites with dense vegetation, close to water, some shading; and ephemeral pools if wet until late spring/early summer. Breeds in permanent water; eggs attached to emergent vegetation. Disperses from water in wet weather. Estivates in small burrows, leaf litter, moist sites near riparian areas.	Egg clusters attached to gravel or rocks in moving water near stream margins.	Mating & egg-laying in streams & rivers (not ponds or lakes), April- early July, after streams slow from winter runoff.	Coast ranges and foothills of the Sierras	L

Common Name	Scientific Name	Status	General Habitat	Microhabitat / Special Features	Breeding Season [Peak Activity]	Range/ County	Potential for Occurrence
Red-Bellied Newt	*Taricharivularis*	CSSC	Adults are terrestrial, becoming aquatic when breeding. Adults emerge after a few fall rains and feed for a period before migrating to their breeding stream. Activity typically occurs at night and in the late afternoon, but newts are also found active in streams and on the surface in daylight during the breeding season and during rains. They spend the dry summer in moist habitats under woody debris, rocks, in animal burrows. Juveniles apparently spend most of their time underground and are not active on the surface until near sexual maturity. Reproduction is aquatic.	Clean rocky streams and rocky rivers with moderate to fast flow. Ponds, lakes, and other standing waters are avoided.	Breeding takes place from late February to May, peaking in March.	Occurs along the coast in Sonoma county, to Humboldt county, and inland to Lake County.	M
Reptiles							
Western Pond Turtle	*Emys marmorata*	CP, CSSC, BLM, USFS	Habitats, with permanent or nearly permanent water with abundant vegetation. Omnivorous, feed on aquatic plants, invertebrates, fish, frogs. Require basking sites, such as partially submerged logs, rocks, floating vegetation. Hibernation in colder areas is underwater in mud. Two habitats for oviposition: along large slow-moving streams, eggs are deposited in sandy banks. Along foothill streams, suitable nest sites may be up hillsides in sandy to very hard soils. Soils need fairly high humidity.	Basking sites required.	Mating in April-May	Northern California to British Columbia (west of Cascades & Sierras crest); from sea level to around 6,700 ft.	L
Birds							
Bald Eagle	*Haliaeetus leucocephalus*	FD, CE, CFP, CDF	Uses large, mature trees or snags, in remote, mixed forest stands near large bodies of water. Nest of sticks, often uses largest tree in stand, with some shading. Large bodies of water or free-flowing rivers with suitable snags and other perches required. Found in a variety of habitats that have permanent water sources. Hunting typically involves swooping onto prey from a perch or from soaring flight. Preys mostly in fish but also on small mammals, water birds and carrion.	Nesting typically involves stands with 40% or less canopy. Platform stick nests are built just below tree crown. Nests built in tall trees, typically 50 to 200 feet above ground.	Peak breeding occurs March - June, although breeding season extends from February-July. The incubation period is ~ 35 days.	Statewide	N

Common Name	Scientific Name	Status	General Habitat	Microhabitat / Special Features	Breeding Season [Peak Activity]	Range/ County	Potential for Occurrence
Osprey	*Pandion haliaetus*	CSSC, CDF	Associated strictly with large, fish-bearing waters, including rivers, lakes, bays, estuaries and surf zones, primarily in ponderosa pine through mixed conifer habitats. Prey mostly on fish.	Large snags & open trees for nesting. Platform stick nests typically within 1/3-mi. of water.	Most are migratory, breeding starts in March and migrate south for the winter.	Statewide	N
Golden Eagle	*Aquila chrysaetos*	CFP, CSSC, BLM, CDF	Rolling foothills, mountain areas, sage-juniper flats, desert. Prey mostly on lagomorphs and rodents. Needs open terrain for hunting. Nests on cliffs and large trees in open areas.	Cliffs.	Egg laying between Jan-Sept, usually begins in March or later.	Statewide	L
Cooper's Hawk	*Accipiter cooperii*	CSSC	Nests in dense stands of second-growth conifer near streams.	Stick platform nest, lined with bark.	March – August [May-July]	Statewide	N
Prairie Falcon	*Falco mexicanus*	CSSC	Uncommon resident/migrant along the inner Coast Ranges and Sierra Nevada. Perennial grasslands, rangeland, open mountains, and some agricultural fields. Forages in open terrain. Prey small mammals, birds, & reptiles.	Nests in open terrain with canyons, cliffs, & rock outcrops, usually within ¼ mi. of water.	Mating season begins with courtship: Feb.-April, ends in late June when most birds have left breeding grounds.	Statewide	L

Common Name	Scientific Name	Status	General Habitat	Microhabitat / Special Features	Breeding Season [Peak Activity]	Range/ County	Potential for Occurrence
Western Yellow-Billed Cuckoo	*Coccyzus americanus occidentalis*	FT, CE	Uncommon to rare summer resident of valley foothill and desert riparian habitats in scattered locations in CA. Current population estimations show about 50 pairs in CA. Gleans grasshoppers, caterpillars, large insects from foliage. A flimsy open cup nest of twigs is built on limb of tree/shrub in dense cover.	Extensive riparian thickets, esp. with mature cottonwoods, willows, dense understory foliage, near slow-moving watercourses.	May-August	Sac River from Red Bluff to Colusa; South Fork Kern R.; Feather R. Oroville to Verona; Butte, Yuba and Sutter counties;	L
Mammals							
Pallid Bat	*Antrozous pallidus*	CSSC, BLM, USFS	Prefer rocky outcrops, cliffs, and crevices near a variety of open habitats for foraging. Roosts in caves, crevices, mines, and occasionally hollow trees and buildings. Locally common species of low elevation habitats in California. It forages over open ground frequently dipping, swooping and gliding. Prey is taken on the ground, aerially and gleaned from vegetation. Caves, crevices, mines and hollow trees are utilized as day roosts providing cooler temperatures during the day. Night roosts typically utilized include more open areas, where temperature is consistent. Considered sensitive to disturbance of roosting sites.	Rocky outcrops, cliffs and crevices near open areas are preferred roosting and cover locations.	Mating occurs between late October and February. Young are born from April - July with peak birthing in May and June.	Statewide; once common now uncommon in CA.	L

Common Name	Scientific Name	Status	General Habitat	Microhabitat / Special Features	Breeding Season [Peak Activity]	Range/ County	Potential for Occurrence
Townsend's Big-Eared Bat	*Corynorhinus townsendii*	CSSC, BLM, USFS	Prefers mesic habitats with caves, mines, tunnels and buildings for roosting and cover. May use separate sites for night, day, hibernation, or maternity roosts. Roosting sites are the most critical limiting factor. Eats largely small moths, gleaned from brush or trees, or feeds along habitat edges. Extremely sensitive to disturbance or roosting sites. A single disturbance event could result in roost abandonment.	Require caves, buildings, mines, tunnels, etc. for roosting.	Mating occurs Nov.- Feb. Young born May-June, peak birthing in late May. Young capable of flight in 2-3 weeks and weaned after 6 weeks.	Statewide; once common now uncommon.	L
Pacific Fisher	*Pekaniapennanti* (West Coast DPS)	FC, CC, CSSC	Preferred habitat includes mid- to late-seral stages of conifer development and deciduous-riparian. High degrees of canopy cover are also preferred. Primarily a carnivore, fishers prey on rabbits, hares, mice, porcupines, squirrels, and mountain beaver. Birds, fruits and carrion are also consumed. Cavities in large trees, snags, and logs. Rocky areas and logging slash provide suitable cover. Fisher are active yearlong.	Hollow logs, trees, and snags are especially important. A large area of mature, dense forest stands with snags and 50% or more canopy cover.	Mating late March to April. Implantation delayed for 10 months until mid-Feb of following year when active pregnancy begins.	Northern Coastal Range, Klamath Mtns, southern Cascades, and Sierra Nevada mtn. range.	N
American Badger	*Taxidea taxus*	CSSC	Grasslands, savannas, and mountain meadows near timberline are preferred. Badgers prey primarily on burrowing rodents.	Sufficient food, friable soils, and relatively open, uncultivated ground.	Mating occurs in late summer or early autumn, followed by delayed implantation	Statewide except for humid coastal forests of Del Norte and portion of Humb. Co.	L

Status:		**Potential to Occur:**	
FE	*Federal Endangered*	**H**	High - Suitable habitat present and/or Known nearby occurrences
FT	*Federal Threatened*		
FC	*Federal Candidate*		
CE	*California Endangered*		
CT	*California Threatened*	**M**	Moderate - Some suitable habitat present
CC	*California Candidate*		
CFP	*California Fully Protected*		
CP	*California Protected*	**L**	Low - Marginal or minimal suitable habitat
CSSC	*California Species of Special Concern*		
BLM	*Bureau of Land Management Sensitive*	**N**	No - No suitable habitat
USFS	*U.S. Forest Service Sensitive*		
WL	*California Watch List*	**U**	Unknown - Lack of information
CDF	*CA Dept. of Forestry Sensitive*		

RESULTS

Plants

The database queries reported a total of 89 special status plant species within the vicinity of the Project Area (see *Table 1a*). 75 of the 89 species on the scoping list were identified as having potential habitat within the PA primarily due to elevation ranges. During the site assessment, ***no listed species were observed.*** See *Figure 3* for survey route.

Plant Communities

No rare plant communities were identified during 2019 surveys. The following communities were idenfied within the Project Area and classified using *A Manual of California Vegetation Second Edition* (CNPS [2019] and Sawyer et al.2009). See *Appendix A* for state and global ranking definitions.

WOODLAND

***Pinus Sabiniana* Woodland Alliance- Gray pine woodland (S4, G4)**

P. sabiniana > 10% absolute cover and dominant in the tree canopy (CNPS [2019]). Found along the creek at the eastern end of the property with *Quercus douglasiana*.

***Quercus douglasii* Woodland- Blue oak woodland (S4, G4)**

Q. douglasii > 50% relative cover in the tree canopy; other hardwoods or conifers may be <30% relative cover in the tree canopy (CNPS [2019]). Found in scattered patches and adjacent to chamise shrubland. Associated species include *Pinus sabiniana, Arctostaphylos manzanita* subsp. *manzanita* and *Cercocarpus betuloides.*

SHRUBLAND

***Adenostoma fasciculatum* Shrubland- Chamise chaparral (S5, G5)**

A. Fasciculatum >50% relative cover in the shrub canopy (CNPS [2019]). Found with *Arctostaphylos manzanita* subsp. *manzanita.*

HERBACEOUS STANDS

***Centaurea solstitialis*- Yellow starthistle semi-natural herbaceous stand (SNR, GNR)**

C. solstitialis >50% relative cover in the herbaceous layer (CNPS [2019]). Associated species include *Elymus caput-medusae, Avena barbata, Hemizonia congesta* subsp. *luzilifolia* but starthistle dominant throughout.

***Avena barbata*- Slim oat semi-natural herbaceous stand (No ranking)**

Avena spp. >50% relative cover and native herbs <10% relative cover in the herbaceous layer (CNPS [2019]).

Associations:

Avena barbata dominant with *Centaurium solstitialis, Elymus caput-medusae,* and *Hemizonia congesta* subsp. *luzulifolia.*

Avena barbata dominant on areas of thin meta-volcanic soils with *Hemizonia congesta* subsp. *luzulifolia, Lessingia nemaclada,* and *Calycadenia pauciflora.*

Aquatic Habitat

Indian Creek is a perennial stream that runs through the property. Other streams present on the property are intermittent and ephemeral. Several small wetland features were identified and mapped. There are no fish streams within the ownership. Two small reservoirs exist on tributaries to Indian Creek and one reservoir is on Indian Creek. These ponds have been in place for numerous years based on the extent of riparian vegetation growing within and adjacent to them and while the reservoirs may have engineering issues, they provide beneficial summer wildlife habitat at the hot, dry site.

Terrestrial Wildlife

The database queries reported a total of fifteen sensitive wildlife species that may have some potential to occur within or near the PA (see *Table 1b*). No listed species were observed during our surveys, and few are actually expected to occur in the habitat types present on the PA. Surprising to the surveyor, no signs of amphibian or reptile use of the ponds was observed. No basking sites exist for pond turtles and the remoteness and ridgetop location of the property surrounded mostly by chaparral may exclude the likely species from such unique wetland habitat. Numerous other species were discounted from having the potential to occur or be impacted by the project due to the lack of habitat on or near the project or due to the rarity of the species. Although wildlife species were observed during field surveys, there are not likely to be any that have direct longterm impacts. Impacts to wildlife use, including migration routes, foraging areas, and breeding or nesting sites are not expected.

DISCUSSION

Ponds

The existing onstream reservoirs found within the PA lack State Water Board permits for storage. Registering and maintaining these ponds is encouraged as they provide a benefit to wildlife in the area.

Oak Woodland

There are no known plans for oak tree removal at this time. However, due to the presence of oak woodlands within the PA it should be noted that any removal of an oak tree greater than five inches in diameter will require a County permit and an additional biological review.

Invasive Species

Centauria solstitialis (yellow star thistle) is an invasive annual herb found within the Project Area. It has a "high" invasive rating by the California Invasive plant counsel (Cal IPC) and is considered one of California's most serious rangeland weeds. It is

recommended to reach out to local experts and partners such as Lake County Resource Concervation District for more information and support on addressing invasive plants.

IMPACTS AND MITIGATION

Mitigation by definition is prescribed when there is a "take" or a loss and as such is a means for reducing, compensating, or moderating any potential losses. Normally a change in land use to a higher use is interpreted by current standards to require mitigation where there is a demonstrated or potential "take" or loss of biological habitat or habitat value. Avoiding unnecessary habitat loss and fragmentation, maintaining natural wildlife movement corridors, and protecting special habitat elements can minimize adverse impacts to wildlife populations.

Potential Impact1:
Removal or failure of existing onstream reservoirs would eliminate these valuable assets to wildlife.

Mitigation Measure 1a:
Seek a domestic use registration for ponds from California Water Board, Division of Water Rights for wildlife.

Potential Impact 2:
Removal of native vegetation can have direct impact on nesting birds or listed species.

Mitigation Measure 2a:
If brush or tree removal work is to be conducted within the breeding season (February 15th-August 15th) a nesting bird survey should take place by a qualified biologist no more than 3 days prior to impact or removal of vegetation. Any active nests should be protected with a 50-100 foot buffer (species dependent) until the nest is found to be no longer active.

Mitigation Measure 2b:
If additional project expansion is planned, the new project area should be evaluated for species impacts prior to site grading or vegetation removal.

Potential Impact 3:
Protection of aquatic resources is needed. Grading and unmaintained roads could potentially lead to sediment discharge into nearby watercourses. See *Table 2* below for observations of potential erosion sites and *Figure 3* for corresponding map points. Encrochement into watercourse buffer zones was also observed.

Table 2.

Map Point	Description
1	Road not hydrologically disconnected on both sides of Indian Creek culvert

Map Point	Description
2	Failed culvert of a small Class III watercourse is running in the road to neighbor's bridge over Indian Creek
3	Road not hydrologically disconnected on both sides of watercourse crossing
4	Minor bank seep behind green house is ditched and causing slight erosion at the old runway fill slope
5	Road at the top of a Class III watercourse with fill erosion
6	Grading spoils deposted at the top of Class III watercourse.

Mitigation Measure 3a:
No additional grading should occur without County permits.

Mitigation Measure 3b:
A road assessment is recommended for all roads within the PA to further identify areas for improvement.

Mitigation Measure 3c:
To remediate sediment impacts within and adjacent to PA watercourses, a Lake and Streambed Alteration Agreement is being recommended for submission to the California Department of Fish and Wildlife (CDFW).

Mitigation Measure 3d:
A water quality permit or Cannabis Cultivation General Order Waste Discharge Requirement from the California Water Board is recommended to ensure waste waters discharged from the PA do not adversily affect waters of the State and to ensure appropriate water resource buffer zones are established.

CONCLUSION

With adherence to the above recommendations and mitigation measures, we find that the proposed project will not have a substantial adverse effect, either directly or indirectly through habitat modifications, on any special-status animal, plant, or plant communitiy identified as a candidate, sensitive, or in local or regional plans, policies, or regulations, or by the CDFW or the USFWS.

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QUALIFICATIONS OF SURVEYORS

Stephanie Martin
Stephanie Martin conducted a wildlife field survey and assisted with preparation of the report. Ms. Martin received her M.S. in Wildlife Ecology from Humboldt State University and her B.S. in Wildlife Biology at University of Montana. For her master's degree, she studied calling behaviors of the northern spotted owl. Her professional experience includes more than twenty years of private consulting in the natural resources fields and numerous years of sensitive species surveys throughout the western United States. Her experience includes conducting biological surveys and site assessments throughout the State for both NEPA and CEQA compliance.

Morgan McMahon
Morgan McMahon lead preparation of the report. Ms. McMahon received a B.S. in Environmental Horticulture and Urban Forestry with an emphasis on Plant Biodiversity and Restoration from University of California, Davis in 2011. Her coursework included California floristics and California plant communities. Ms. McMahon has been working in plant related fields for over 10 years and performing floristic surveys for NCRM since 2015. She is also an ISA certified arborist.

Kerry Heise
Kerry Heise conducted the late season botanical field survey. Mr. Heise received a B.S. in Botany in 1985 and a M.S. in Natural Resource Management in 1995 His thesis work was on willow distribution in Central Nevada through the University of Reno. Over his career he has published in several botanical journal and lead workshops on multiple botanical subjects. For nearly 30 years he has worked as a botanical consultant conducting floristic surveys and mapping vegetation communities in Northern California.

Estelle Clifton
Estelle Clifton conducted the mid-season botanical field survey and assisted with report preparation. Ms. Clifton has a B.S. Forestry (Production Management), Humboldt State University, Arcata, Ca. 2005 and B.A. Culture Ecology and Sustainable Community, New College of California, San Francisco, Ca. 2001. Coursework included completion of a plant taxonomy course. She has over fourteen years of professional experience in the study of flora and habitat types of the Pacific Northwest and conducts wetland delineations, as per the Army Corps of Engineers Technical Report (#Y-87-1) and the California Coastal Act guidelines.

Heather Morrison
Heather Morrison conducted the early season botanical field survey. Ms. Morrison received a B.S. in Forestry and Watershed Management from Humboldt State University in 1996. She is a Registered Professional Forester (#2681) with over 20 years of professional forestry and environmental planning experience. Ms. Morrison provides Botanical Assessments for large and small projects requiring compliance with the California Environmental Quality Act (CEQA). Ms. Morrison's experience includes conducting state and federal protocol Special Status Plant Species Surveys.

Appendix A- *Definitions for Plant Species and Communities Ranking Status*

Plants addressed in the rare plant assessment are catalogued on the following lists:

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act
- Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act
- CNPS list 1A species (plants presumed extinct in California)
- CNPS list 1B (plants rare, threatened or endangered in California)
- CNPS list 2 species (plants rare threatened or endangered in California but more common elsewhere)
- CNPS list 3 and list 4 species (plants with limited distribution but need more information and are on a review list)
- Plants that are not on a specific list but have recognized regional or local interest and qualify for protection

The CNPS New Threat Code extensions and their meanings:
The classification system created by California Native Plant Society helps distinguish between rarity, endangerment, and distribution.
.1 – Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

Global Ranking
The Global rank (G-rank) is a reflection of the overall condition of an element throughout its global range.

Species or Community Level
G1 = Less than 6 viable element occurrences (Eos) OR less than 1,000 individuals OR less than 2,000 acres.
G2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres.
G3 = 21-80 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres.
G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

Subspecies Level
Subspecies receive a T-rank attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, where the T-rank reflects the global situation of just the subspecies or variety.

State Ranking
The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.
S1 = Less than 6 EOs OR less than 1,000 individuals OR less than 2,000 acres
S1.1 = very threatened
S1.2 = threatened
S1.3 = no current threats known
S2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres
S2.1 = very threatened
S2.2 = threatened
S2.3 = no current threats known
S3 = 21-80 EOs or 3,000-10,000 individuals OR 10,000-50,000 acres
S3.1 = very threatened
S3.2 = threatened
S3.3 = no current threats known
S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat. NO THREAT RANK.
S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK.

Appendix B- *Plant Species Identified During the Floristic Survey at Spivack Property.*

Family	Scientific Name	Common Name
Gymnosperms		
Cupressaceae		
	Hesperocyparis sargentii	Sargent cypress
Pinaceae		
	Pinus sabiniana	Grey pine
Anacardiaceae		
	Toxicodendron diversilobum	Poison-oak
Apiaceae		
	Lomatium utriculatum	lomatium
	Perideridia kelloggii	yampah
	Sanicula sp.	sanicle
	Tauschia kelloggii	Kellogg's tauschia
	Torilis arvensis	Field hedge parsley
Apocynaceae		
	Asclepias fascicularis	Narrow leaf milkweed
Asteraceae		
	Achillea millefolium	Common yarrow
	Agoseris grandiflora	California dandelion
	Artemesia douglasiana	mugwart
	Calycadenia pauciflora	Small flowered calycandenia
	Centuarea melitensis	Napa starthistle
	Centaurea solstitialis	Yellow starthistle
	Chamomilla suaveolens	Pineapple weed
	Cirsium occidentale subsp. *venustum*	Venus thistle
	Ericameria arborescens	goldenfleece
	Grindelia camporum	gumweed
	Hemizonia congesta subsp. *clevelandii*	Cleveland's tarweed
	Hemizonia congesta subsp. *luzulifolia*	Woodrush tarweed
	Lessingia nemaclada	Slender stemmed lessingia
	Madia gracilis	tarweed
	Rigiopappus leptocladus	Wire weed
	Solidago sp.	goldenrod
	Tragopogon porrifolium	Purple salsify
	Wyethia angustifolia	Narrow leaved mule ears
	Wyethia glabra	Smooth mule ears
	Xanthium strumarium	Rough cockleburr
Boraginaceae		
	Amsinckia menziesii	Menzie's fiddleneck
	Phacelia imbricata	Imbricate phacelia
Brassicaceae		

Family	**Scientific Name**	**Common Name**
	Cardamine sp.	Milk maids
	Lepidium latifolium	Broadleaved pepper grass
	Sisymbrium officinale	Hedge mustard
Convolvulaceae		
	Calystegia purpurata ssp. *purpurata*	Purple western morning glory
Datiscaceae		
	Datisca gloemrata	Durango root
Ericaceae		
	Arctostphylos manzanita var. *manzanita*	manzanita
Fabaceae		
	Acmispon americanus	American bird's foot
	Acmispon brachycarpus	Hairy hill lotus
	Acmispon glaber	deerweed
	Acmispon parviflorus	Hill lotus
	Cercis occidentalis	Redbud
	Medicago sp.	Sweet clover
	Melilotus albus	White sweetclover
	Trifolium obtusifolium	Creek clover
	Trifolium microcephalum	Small head clover
	Trifolium variegatum	Variegated clover
	Vicia cracca	Bird vetch
	Vicia villosa	Hairy vetch
Fagaceae		
	Quercus chyrsolepis	Canyon live oak
	Quercus douglasii	Blue oak
	Quercus durata	Leaher oak
	Quercus lobata	Valley oak
	Quercus palmeri	Palmer's oak
	Quercus wislizeni	Interior live oak
Geraniaceae		
	Erodium sp.	Stork's bill
Grossulariaceae		
	Ribes californicum	California gooseberry
Lamiaceae		
	Monardella villosa subsp. *villosa*	Coyote mint
	Scutellaria antirrhinoides	Nose skullcap
	Stachys stricta	Hedge nettle
Linaceae		
	Hesperolinon disjunctum	Coast range western flax
Onagraceae		
	Clarkia purpurea subsp. *qeadrivulnera*	Purple clarkia
	Epilobium densiflorum	Willow herb
Orobanchaceae		
	Castilleja attenuata	Valley tassels

Family	Scientific Name	Common Name
	Castilleja foliolosa	Texas paintbrush
Papaveraceae		
	Argemone munita	Prickly poppy
	Eschscholzi californica	California poppy
	Romneya trichocalyx	hairy matilija poppy
Phyrmaceae		
	Erythranthe guttata	Seep-spring monkeyflower
Plantaginaceae		
	Plantago erecta	California plantain
Polemoniaceae		
	Gilia capitata subsp. *capitata*	gilia
	Leptosiphon ciliatus	whiskerbrush
	Navarretia pubescens	Purple navarretia
	Navarretia squarrosa	Skunkweed
Polygonaceae		
	Eriogonum dasyanthemum	Chaparral buckwheat
	Rumex crispus	Curly dock
Ranunculaceae		
	Ranunculus californicus	California buttercup
Rhamnaceae		
	Ceanothus cuneatus var. *cuneatus*	buckbrush
	Frangula californica	California coffeeberry
	Rhamnus ilicifolia	
Rosaceae		
	Adenostoma fasciculatum	chamise
	Cercocarpus betuloides	Mountain mahogany
	Holodiscus discolor	Oceanspray
	Heteromeles arbutifolia	toyon
	Rosa californicum	rose
Rubiaceae		
	Galium andrewsii subsp. *andrewsii*	Phlox leaved bedstraw
	Gallium parisiense	Wall bestraw
	Galium porrigens	Climbing bedstraw
Salicaceae		
	Populus fremontii	cottonwood
	Salix laevigata	Polished willow
	Salix lasiolepis	Arroyo willow
Verbenaceae		
	Verbena lasiostachys	Western verbena
Monocotyledons		
Agavaceae		
	Chloragalum pomeridianum var. *pomeridianum*	Soap plant
Cyperaceae		

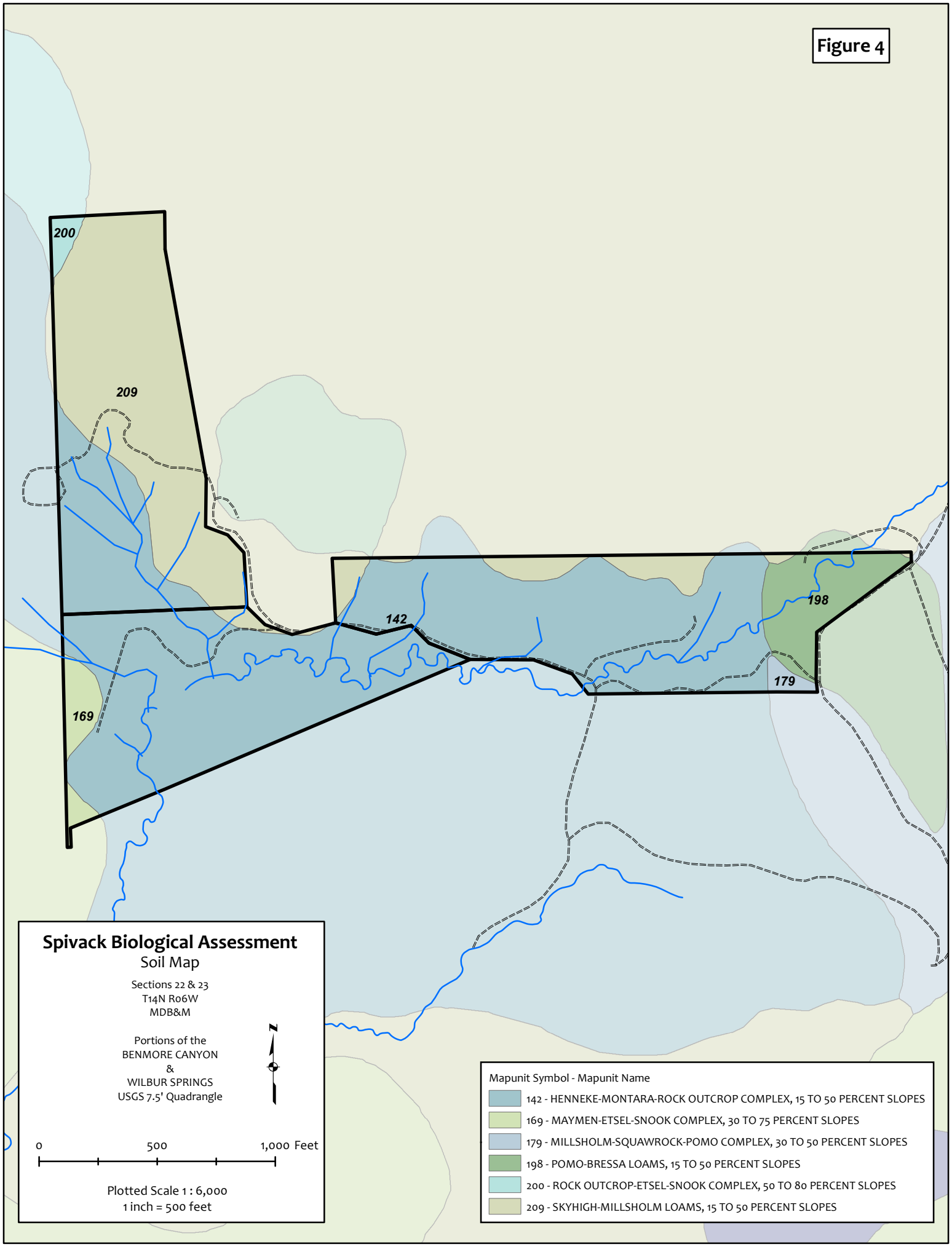
Family	Scientific Name	Common Name
	Carex barbarae	Valley sedge
	Carex nudata	Torrent sedge
	Cyperus eragrostis	Tall cyperus
	Eleocharis macrostachya	spikerush
	Isolepis cernua	Low bulrush
Iridaceae		
	Sisyrinchium bellum	Blue eyed grass
Juncaceae		
	Juncus bolanderi	Bolander's rush
	Juncus effuses var. *pacificus*	Pacific rush
	Juncus patens	rush
	Juncus xiphiodes	Iris leaved rush
Poaceae		
	Agrostis exarata	bentgrass
	Avena barbata	Slim oat
	Avena fatua	Wild oat grass
	Bromus carninatas	California bromegrass
	Bromus hordaceous	Soft chess
	Bromus madritensis subsp. *Madritensis*	Foxtail chess
	Bromus madritensis subsp. *rubens*	Foxtail brome
	Elymus caput-medusae	Medusa head
	Elymus glaucus	Blue wildrye
	Elymus multisetus	Big squirreltail grass
	Elymus triticoides	Beardless wild rye
	Festuca bromoides	Brome fescue
	Festuca idahoensis	Blue fescue
	Festuca microstachys	Small fescue
	Festuca perennis	Italian rye grass
	Koeleria macrantha	June grass
	Melica californica	California melic grass
	Phalaris aquatica	Harding grass
	Poa annua	Annual bluegrass
	Poa secunda	Pine bluegrass
	Polypogon monspeliunsis	Annual beard grass
	Stipa lepida	Foothill needlegrass
	Stipa pulchra	Purple needle grass
Themidaceae		
	Brodiaea elegans ssp. e*legans*	Harvest brodiaea
	Triteleia laxa	Ithuriel's spear
Typhaceae		
	Typha latifolia	Broadleaf cattail

Appendix C- *Animal Species Detected Within the Spivack Biological Assessment Area*

Black phoebe (*Sayornis nigricans*)
California thrasher (*Toxostoma redivivum*)
Wrentit (*Chamea fasciata*)
California towhee (*Melozone crissalis*)
Turkey vulture (*Cathartes aura*)
Western scrub jay (*Aphelocoma californica)*
Red-shouldered hawk (*Buteo lineatus*)

Appendix D- *Soils Map and Report*

Figure 4



Spivack Biological Assessment
Soil Map

Sections 22 & 23
T14N R06W
MDB&M

Portions of the
BENMORE CANYON
&
WILBUR SPRINGS
USGS 7.5' Quadrangle

N

0 500 1,000 Feet

Plotted Scale 1 : 6,000
1 inch = 500 feet

Mapunit Symbol - Mapunit Name

- 142 - HENNEKE-MONTARA-ROCK OUTCROP COMPLEX, 15 TO 50 PERCENT SLOPES
- 169 - MAYMEN-ETSEL-SNOOK COMPLEX, 30 TO 75 PERCENT SLOPES
- 179 - MILLSHOLM-SQUAWROCK-POMO COMPLEX, 30 TO 50 PERCENT SLOPES
- 198 - POMO-BRESSA LOAMS, 15 TO 50 PERCENT SLOPES
- 200 - ROCK OUTCROP-ETSEL-SNOOK COMPLEX, 50 TO 80 PERCENT SLOPES
- 209 - SKYHIGH-MILLSHOLM LOAMS, 15 TO 50 PERCENT SLOPES

Map Unit Description (Brief, Generated)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, provide information on the composition of map units and properties of their components.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated)

Lake County, California

Map Unit: 142—Henneke-Montara-Rock outcrop complex, 10 to 50 percent slopes, MLRA 15

Component: Henneke (40%)

The Henneke component makes up 40 percent of the map unit. Slopes are 10 to 50 percent. This component is on hillslopes on hills. The parent material consists of residuum weathered from serpentinite. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Montara (30%)

The Montara component makes up 30 percent of the map unit. Slopes are 10 to 50 percent. This component is on hillslopes on hills. The parent material consists of residuum weathered from serpentinite. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Rock outcrop (16%)

Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.

Component: Dubakella (5%)

Generated brief soil descriptions are created for major soil components. The Dubakella soil is a minor component.

Component: Okiota (4%)

Generated brief soil descriptions are created for major soil components. The Okiota soil is a minor component.

Component: Maxwell (3%)

Generated brief soil descriptions are created for major soil components. The Maxwell soil is a minor component.

Component: Millsholm (2%)

Generated brief soil descriptions are created for major soil components. The Millsholm soil is a minor component.

Map Unit: 177—Millsholm-Bressa loams, 30 to 50 percent slopes

Component: Millsholm (45%)

The Millsholm component makes up 45 percent of the map unit. Slopes are 30 to 50 percent. This component is on hills, hills. The parent material consists of residuum weathered from sandstone and shale. Depth to a root restrictive layer, bedrock, lithic, is 11 to 15 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Bressa (35%)

The Bressa component makes up 35 percent of the map unit. Slopes are 30 to 50 percent. This component is on hills, hills. The parent material consists of residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 26 to 30 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Hopland (4%)

Generated brief soil descriptions are created for major soil components. The Hopland soil is a minor component.

Component: Etsel (4%)

Generated brief soil descriptions are created for major soil components. The Etsel soil is a minor component.

Component: Mayacama (2%)

Generated brief soil descriptions are created for major soil components. The Mayacama soil is a minor component.

Component: Skyhigh (2%)

Generated brief soil descriptions are created for major soil components. The Skyhigh soil is a minor component.

Component: Snook (2%)

Generated brief soil descriptions are created for major soil components. The Snook soil is a minor component.

Component: Squawrock (2%)

Generated brief soil descriptions are created for major soil components. The Squawrock soil is a minor component.

Component: Unnamed (2%)

Generated brief soil descriptions are created for major soil components. The Unnamed soil is a minor component.

Component: Maymen (2%)

Generated brief soil descriptions are created for major soil components. The Maymen soil is a minor component.

Map Unit: 179—Millsholm-Squawrock-Pomo complex, 30 to 50 percent slopes

Component: Squawrock (30%)

The Squawrock component makes up 30 percent of the map unit. Slopes are 30 to 50 percent. This component is on hills, mountains, mountains. The parent material consists of residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 37 to 41 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Millsholm (30%)

The Millsholm component makes up 30 percent of the map unit. Slopes are 30 to 50 percent. This component is on mountains, hills, mountains. The parent material consists of residuum weathered from sandstone and shale. Depth to a root restrictive layer, bedrock, lithic, is 11 to 15 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Pomo (20%)

The Pomo component makes up 20 percent of the map unit. Slopes are 30 to 50 percent. This component is on mountains, hills, mountains. The parent material consists of residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 58 to 62 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Skyhigh (3%)

Generated brief soil descriptions are created for major soil components. The Skyhigh soil is a minor component.

Component: Rock outcrop (3%)

Generated brief soil descriptions are created for major soil components. The Rock outcrop soil is a minor component.

Component: Bressa (3%)

Generated brief soil descriptions are created for major soil components. The Bressa soil is a minor component.

Component: Hopland (3%)

Generated brief soil descriptions are created for major soil components. The Hopland soil is a minor component.

Component: Mayacama (3%)

Generated brief soil descriptions are created for major soil components. The Mayacama soil is a minor component.

Component: Maymen (3%)

Generated brief soil descriptions are created for major soil components. The Maymen soil is a minor component.

Component: Yorkville (2%)

Generated brief soil descriptions are created for major soil components. The Yorkville soil is a minor component.

Map Unit: 198—Pomo-Bressa loams, 15 to 50 percent slopes

Component: Pomo (60%)

The Pomo component makes up 60 percent of the map unit. Slopes are 15 to 50 percent. This component is on hills, hills. The parent material consists of residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 58 to 62 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Bressa (15%)

The Bressa component makes up 15 percent of the map unit. Slopes are 15 to 50 percent. This component is on hills, hills. The parent material consists of residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 26 to 30 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Unnamed (3%)

Generated brief soil descriptions are created for major soil components. The Unnamed soil is a minor component.

Component: Marpa (3%)

Generated brief soil descriptions are created for major soil components. The Marpa soil is a minor component.

Component: Millsholm (3%)

Generated brief soil descriptions are created for major soil components. The Millsholm soil is a minor component.

Component: Yorkville (3%)

Generated brief soil descriptions are created for major soil components. The Yorkville soil is a minor component.

Component: Bressa (3%)

Generated brief soil descriptions are created for major soil components. The Bressa soil is a minor component.

Map Unit: 209—Skyhigh-Millsholm loams, 15 to 50 percent slopes

Component: Skyhigh (45%)

The Skyhigh component makes up 45 percent of the map unit. Slopes are 15 to 50 percent. This component is on intermediate and lower slopes on hills, hills. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock, lithic, is 38 to 42 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R015XF006CA Steep Clayey Hills ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Millsholm (25%)

The Millsholm component makes up 25 percent of the map unit. Slopes are 15 to 50 percent. This component is on upper slopes and hilltops hills on hills. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock, lithic, is 16 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Bressa (10%)

Generated brief soil descriptions are created for major soil components. The Bressa soil is a minor component.

Component: Asbill (4%)

Generated brief soil descriptions are created for major soil components. The Asbill soil is a minor component.

Component: Etsel (4%)

Generated brief soil descriptions are created for major soil components. The Etsel soil is a minor component.

Component: Maymen (3%)

Generated brief soil descriptions are created for major soil components. The Maymen soil is a minor component.

Component: Unnamed (3%)

Generated brief soil descriptions are created for major soil components. The Unnamed soil is a minor component.

Component: Hopland (3%)

Generated brief soil descriptions are created for major soil components. The Hopland soil is a minor component.

Component: Sleeper (3%)

Generated brief soil descriptions are created for major soil components. The Sleeper soil is a minor component.

Data Source Information

Soil Survey Area: Lake County, California
Survey Area Data: Version 15, Sep 17, 2018