

BIOLOGICAL RESOURCE ASSESSMENT

Aquatic and Terrestrial Wildlife, and Botanical Resources

Valley's Edge Project

Butte County, California

December 2018



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BIOLOGICAL RESOURCE ASSESSMENT

Valley's Edge Project

Project Location:

Butte County, California
Section 28, 29, 32, 33 T 22 N, R 02 E
&
Section 4, and 5 T 21 N, R 02 E

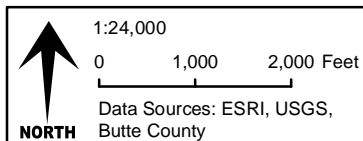
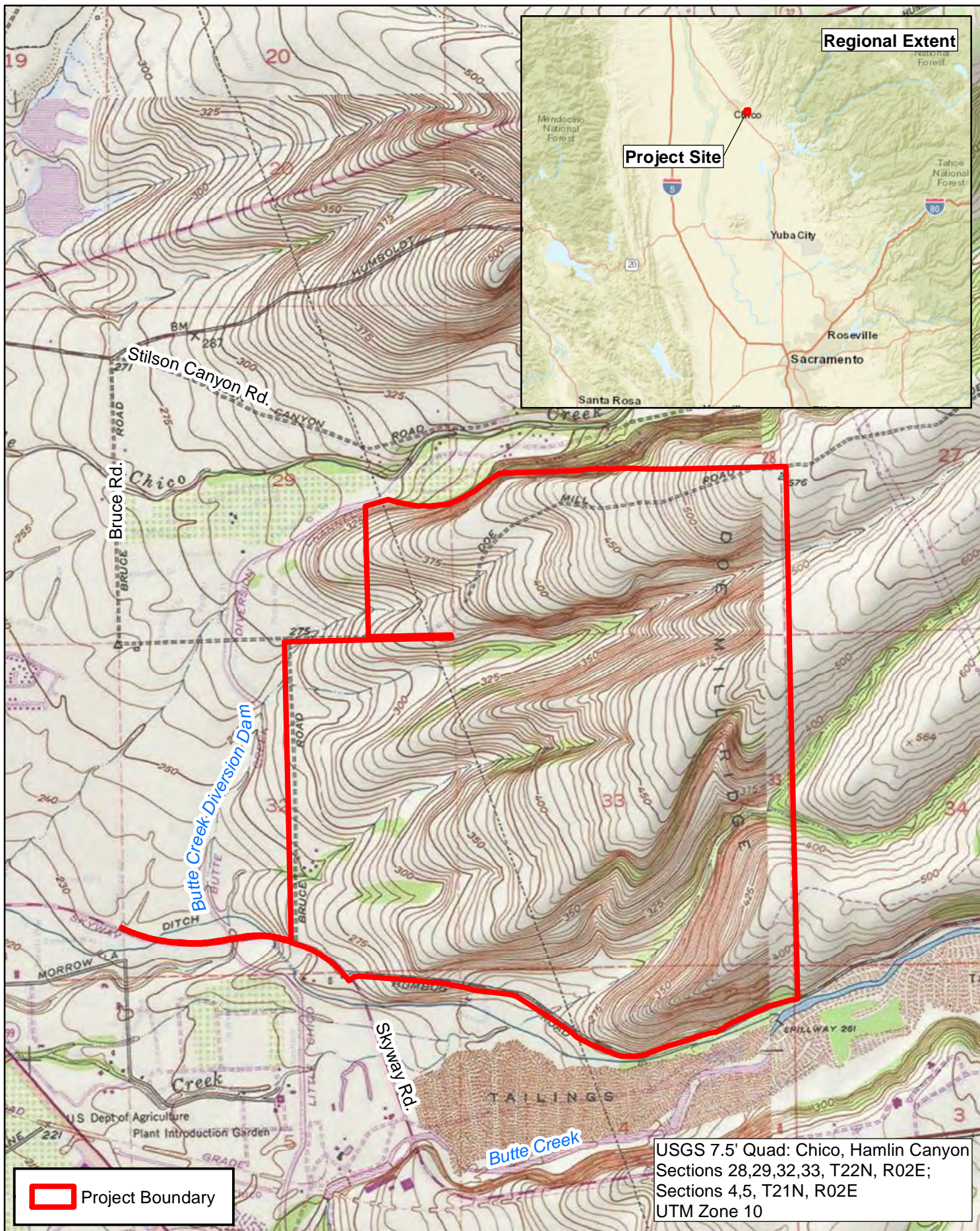
INTRODUCTION

Purpose and Overview

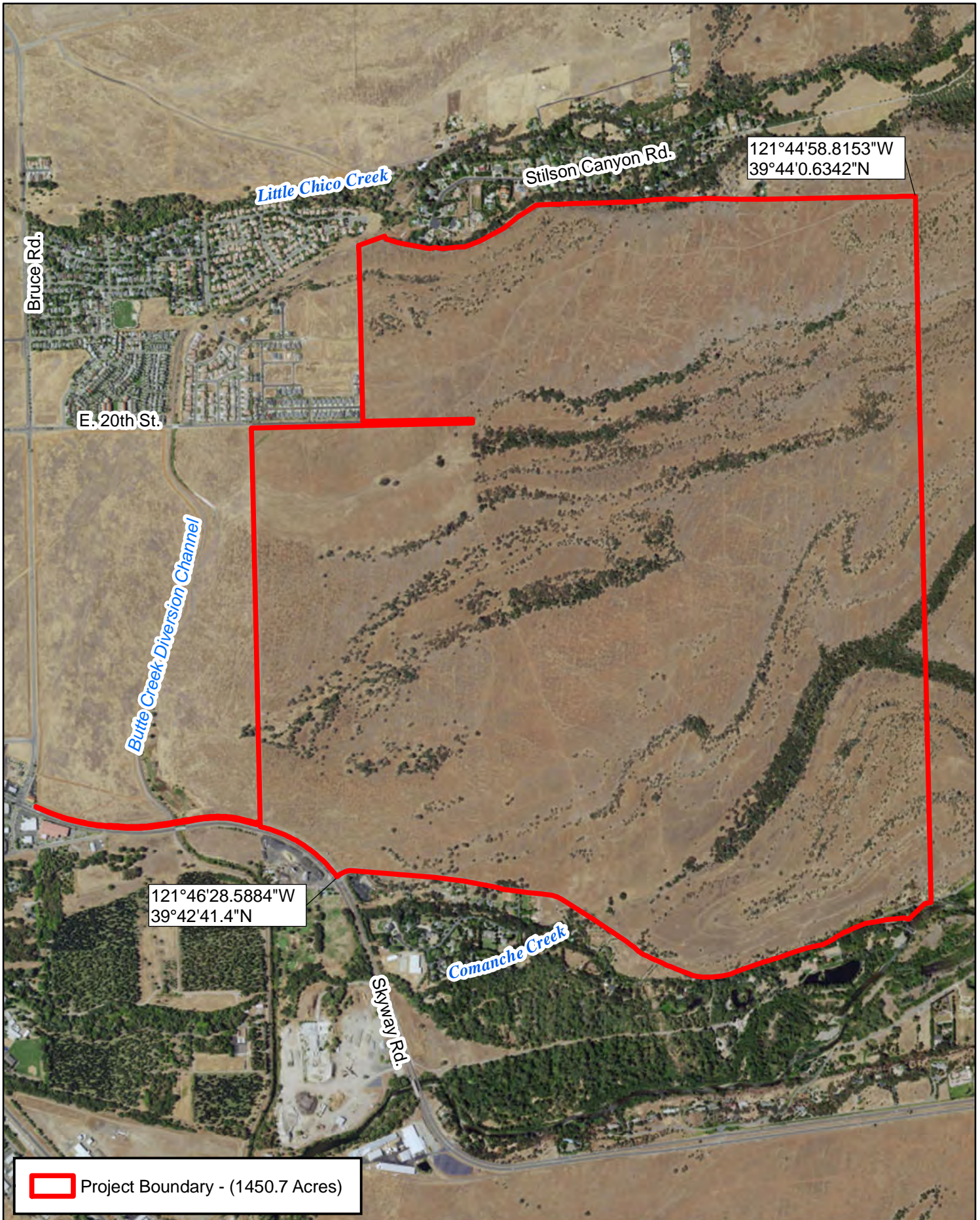
The purpose of this biological resource assessment (BRA) is to document the endangered, threatened, sensitive and rare species, and their habitats that occur in the biological survey area (BSA) of the Valley's Edge Project (Project) located east of the City of Chico in unincorporated Butte County, California (**Figure 1 and Figure 2**). Gallaway Enterprises conducted habitat assessments and botanical surveys in the BSA (the area in which project activities occur and where biological surveys are conducted) to evaluate site conditions and potential Project impacts to biological and botanical species. The proposed Project is an approximately 1,451 acre community development comprised of mixed use residential, mixed use commercial and open space. The BSA is located north of Honey Run Road, east of the Potter Road bike path, and south of Doe Mill Road/E. 20th Street. A utility corridor running west along Skyway Road from the southwest corner of the site is included as part of the Project boundary (**Figure 3**). Other primary references consulted include species lists and information gathered using United States Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPAC), California Department of Fish and Wildlife's Natural Diversity Database (CNDDB), the California Native Plant Society's (CNPS) list of rare and endangered plants, literature review, and past botanical and biological surveys conducted on site. The results of the BRA include the findings of biological and botanical surveys, identification of sensitive habitats with potential to occur in the BSA, and recommendations to avoid or minimize impacts.

Project Location and Environmental Setting

The proposed Project is located east of the City of Chico in unincorporated Butte County, California, in the "Chico" USGS Quadrangle, Section 28, 29, 32, 33 Township 22 N, Range 02 E, and Section 4, and 5 Township 21 N, Range 02 E. The Project site is located north of Honey Run Road, east of Potter Road, and south of Doe Mill Road/E. 20th Street at the base of the foothills of the Sierra Nevada mountain range. A utility corridor running west along Skyway Road from the southwest corner of the BSA to Bruce Road is included as part of the Project boundary. Residential developments occur along the northern boundary of the Project. Undisturbed foothills dominated by oak woodland occurs to the east of the



Valley's Edge Development Project
Regional Location
Figure 1



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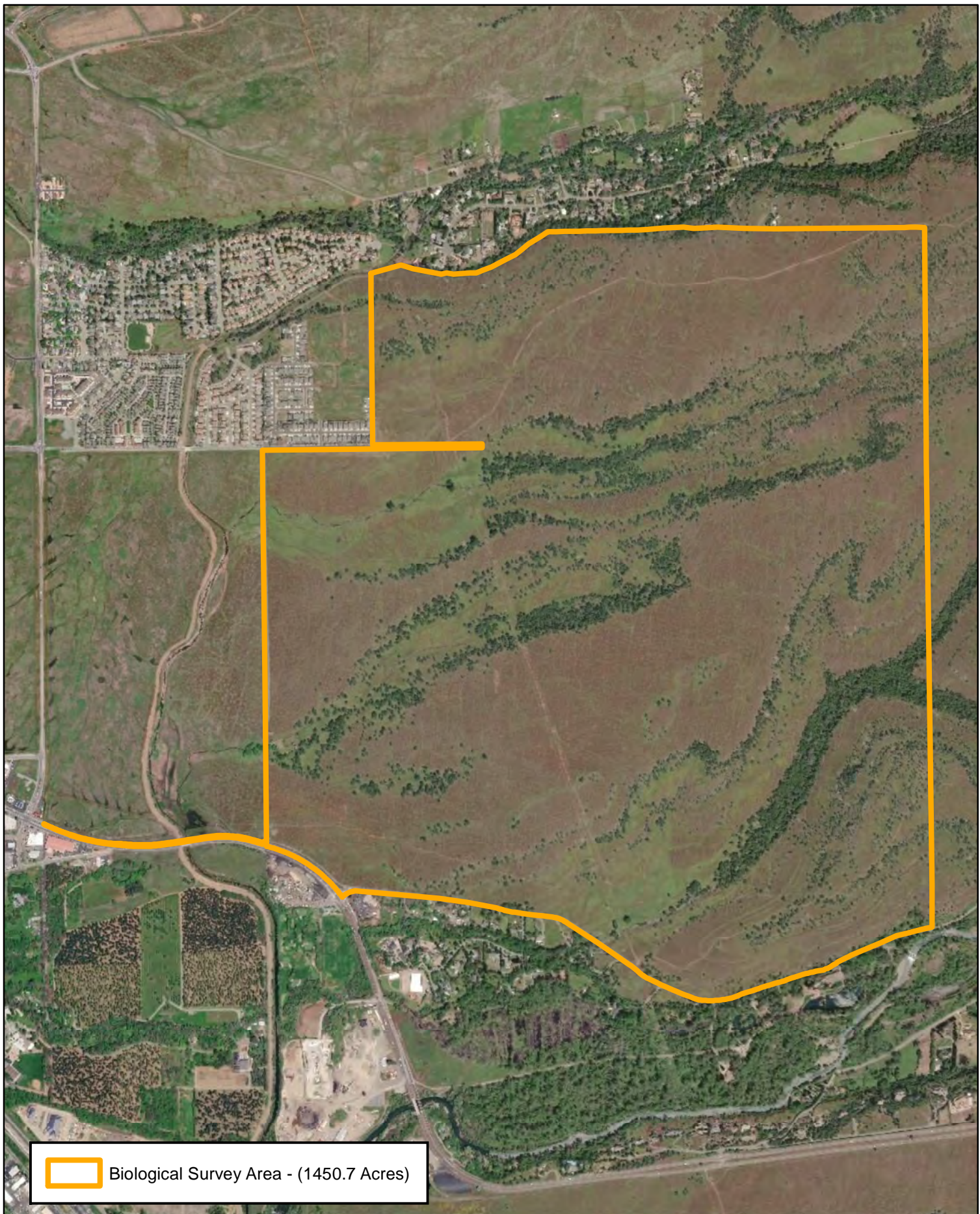
0 500 1,000 Feet

Data Sources: ESRI (Base map sourced:
05/11/16), USGS, Butte County

Valley's Edge Development Project
Project Location
Figure 2

gallaway
ENTERPRISES

GE# 14-108 Map Date: 05/11/16



Project. Along the southern boundary of the Project is Honey Run Road with Butte Creek and low density housing developments located south of the roadway. To the west of the Project is Potter Road and open land containing vernal complexes.

Within the BSA, the vegetation community is comprised of blue oak-foothill pine woodland and annual grassland habitat with scattered wetlands occurring within the annual grassland habitat. The Project site is currently used for cattle grazing, rock harvesting, and storing bee hive boxes. The topography of the site is varied with much of the site sloping with a western aspect but is cut by several small valleys and a small bluff in the southeastern corner of the site. Unnamed ephemeral drainages flow through the small valleys present and Comanche Creek flows from east to southwest through the southeastern portion of the BSA. All of the unnamed drainages within the Project site flow offsite to the west into the Butte Creek Diversion Channel. The average elevation is 415 feet above mean sea level. Soils within the BSA are primarily gravelly loams and cobbly clays with a shallow restrictive layer, or duripan, frequently occurring between 2 to 10 inches deep.

Project Description

The current Project design includes the construction of 466 acres of mixed use residential development, 34 acres of mixed use commercial development, 44 acres of backbone infrastructure, and 896 acres of open space. The 898 acres of open space includes a 60-90 acre community park, 400 acres for a regional park, and 406 acres for neighborhood parks and open space corridors. An ecological preserve containing vernal pool complexes will be included in the area proposed for open space in the northwest portion of the Project site. Utilities for the Project will run west along Skyway Road from the southern edge of the BSA to Bruce Road and tie into existing facilities. The results of this BRA will be used to identify any sensitive habitats or species that may be present on the site so that these resources can be avoided or mitigated to the extent possible.

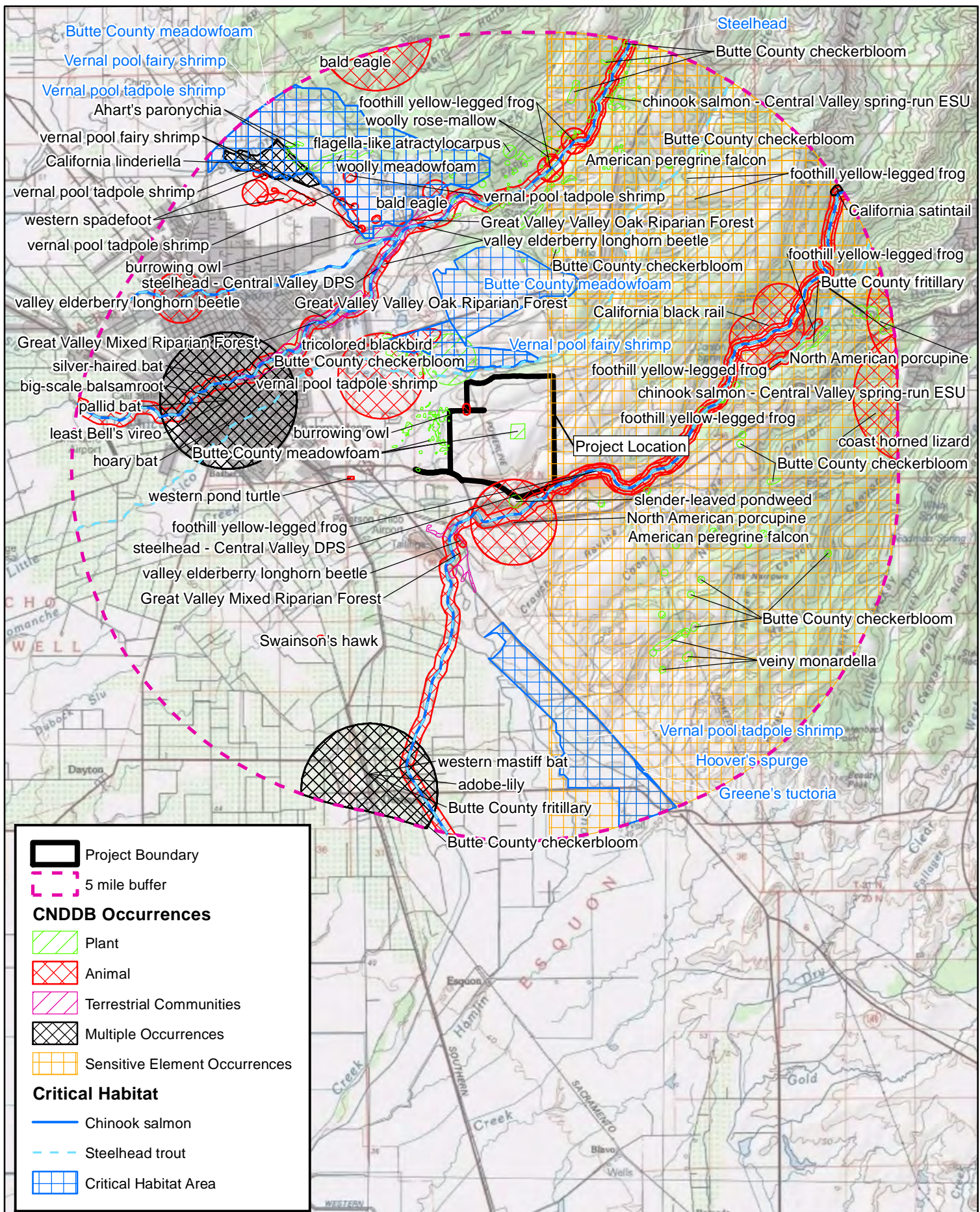
Biological Survey Area

The BSA is the area in which construction, staging and access associated with the proposed project occur and where the focuses of biological surveys are conducted. The BSA for the Project is confined to the Project boundary (**Figure 3**). The BSA is approximately 1,451 acres.

METHODS

References Consulted

Gallaway Enterprises obtained lists of special-status species that occur in the vicinity of the BSA. The CNDDDB Geographic Information System (GIS) database was also consulted and showed special-status species within a five (5) mile radius of the BSA (**Figure 4**). Other primary sources of information regarding the occurrence of federally listed threatened, endangered, purposed and candidate species, and their habitats within the BSA used in the preparation of this BRA are:



- The USFWS IPaC Official Species List for the Project area (**Appendix A; Species Lists**);
- The results of a species record search of the California Department of Fish and Wildlife (CDFW) CNDDDB, RareFind 5, for the 7.5 minute USGS Chico (3912167), Hamlin Canyon (3912166), Paradise West (3912176) and Richardson Springs (3912177) quadrangles (**Appendix A; Species Lists**);
- The review of the CNPS Inventory of Rare and Endangered Vascular Plants of California for the 7.5 minute USGS Chico (39121F7), Hamlin Canyon (39121F6), Paradise West (39121G6) and Richardson Springs (39121G7) quadrangles (**Appendix A; Species Lists**);
- Gallaway Consulting Biological Resources Assessment from 2006;
- Gallaway Consulting Draft Delineation of Waters of the U.S. from 2006;
- Gallaway Consulting Draft Delineation of Waters of the U.S. from 2007;
- Gallaway Consulting Butte County Meadowfoam Surveys from 2007, 2008 and 2010;
- May and Associates Rare Plant Assessment from 2012;
- Gallaway Enterprises Butte County Meadowfoam Surveys from 2013, 2014, 2015, 2016;
- Protocol-level Wet and Dry Season Federally Listed Large Branchiopod Surveys from 2015 and 2016;
- Gallaway Enterprises Botanical Surveys from 2017; and
- Gallaway Enterprises Delineation of Waters of the U. S. from 2016 (verified in 2018).

Critical Habitat

The ESA requires that critical habitat be designated for all species listed under the ESA. Critical habitat is designated for areas that provide essential habitat elements that enable a species survival and which are occupied by the species during the species listing under the ESA. Areas outside of the species range of occupancy during the time of its listing can also be determined as critical habitat if the agency decides that the area is essential to the conservation of the species.

The USFWS Critical Habitat Portal was accessed on December 17, 2018 to determine if critical habitat occurs within the BSA. Appropriate Federal Registers were also used to confirm the presence or absence of critical habitat.

Waters of the United States

Field delineations of waters of the United States were conducted within the Valley's Edge Project site in 2006 and 2007 by Gallaway Consulting, but were never submitted to the U.S. Army Corps of Engineers (Corps) for verification. Additional field visits were conducted by Gallaway Enterprises to update the original delineation efforts in 2014, 2015 and 2016. Based on these additional field visits a draft Delineation of Waters of the United States report was prepared in June 2016 and submitted to the

Corps for verification. This delineation was verified by the Corps on January 2, 2018. The Corps verified a total of 11.18 acres of other waters and 6.25 acres of wetlands as jurisdictional Waters of the U.S. within the BSA.

Habitat Assessment

A habitat assessment of the BSA was conducted initially by Gallaway Consulting in 2006. Subsequent field visits have been conducted within the BSA in 2007, 2008, 2010, 2012, 2013, 2014, 2015, 2016, and 2017 to determine the potential for special-status wildlife and botanical species and their habitats to occur within the BSA. Habitat assessments were conducted by walking transects throughout the entire BSA. Potential habitat when identified for special-status species was evaluated based on vegetation composition and structure, physical features (e.g. soils, elevation), micro-climate, surrounding area, presence of predatory species and available resources (e.g. prey items, nesting substrates). A list of wildlife species observed within the BSA during the 2017 habitat assessment field visits is included as **Appendix B**.

Protocol-level Biological and Botanical Surveys

Surveys for wildlife and botanical species have been conducted within the BSA for numerous years starting in 2006 to determine presence of special-status wildlife and botanical species within the BSA. Protocol-level botanical surveys were conducted for the species determined to have suitable habitat within the BSA in 2006, 2007, 2008, 2010, 2012, 2013, 2015, 2016, and 2017. The most recent 2017 botanical survey report, which includes an observed plant list, is attached to this BRA as **Appendix C**. Based on the habitats present within the BSA, special-status botanical species that have been surveyed for within the BSA include big-scale balsamroot (*Balsamorhiza macrolepis*), round-leaved filaree (*California macrophylla*), flagella-like atractylocarpus (*Campylopodiella stenocarpa*), pink creamsacs (*Castilleja rubicundula* var. *rubicundula*), dwarf downingia (*Downingia pusilla*), Hoover's spurge (*Euphorbia hooveri*), Butte County fritillary (*Fritillaria eastwoodiae*), Boggs Lake hedge-hyssop (*Gratiola heterosepala*), Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*), Butte County meadowfoam (*Limnanthes floccosa* ssp. *californica*), slender Orcutt grass (*Orcuttia tenuis*), Ahart's paronychia (*Paronychia ahartii*), Butte County checkerbloom (*Sidalcea robusta*), Butte County golden clover (*Trifolium jokerstii*), and Greene's tuctoria (*Tuctoria greenei*).

Protocol-level wet-season listed large branchiopod surveys were conducted by Gallaway Enterprises senior botanist, Elena Gregg (10(a)1 recovery permit # TE-13632B-1), during the wet-season of 2014-2015 and dry-season sampling was conducted in 2016 by ECORP Consulting, Inc. to complete the USFWS survey protocol for listed large branchiopods. The wet-season and dry-season sampling reports are attached to this BRA as **Appendix D**.

RESULTS

Habitat Types

Five habitat types occur within the BSA as described below. Their distribution within the BSA is depicted in **Figure 5**.

Terrestrial

Blue Oak-Foothill Pine

Blue Oak-Foothill Pine woodland occurs throughout the BSA but is frequently concentrated in bands associated within the creeks and valleys. The dominant species within this habitat type consist of blue oak (*Quercus douglasii*) with foothill pine (*Pinus sabiniana*) and interior live oak (*Quercus wislizeni*) interspersed. Associated shrub species include buckbrush (*Ceanothus cuneatus*), and California coffeeberry (*Rhamnus californica*). The ground cover is mainly comprised of annuals, such as soft brome (*Bromus hordeaceus*), wild oats (*Avena barbata*), and medusa head grass (*Elymus caput-medusae*). Many species of amphibians, reptiles, birds, mammals inhabit and breed in blue oak-foothill pine communities. Blue oaks produce an abundant seed crop every two to three years which provide an important food resource for many species such as acorn woodpeckers (*Melanerpes formicivorus*), mule deer (*Odocoileus hemionus*), rodents, and black bear (*Ursus americanus*). Scrub jays, yellow-billed magpies, western gray squirrels, and California ground squirrels that cache acorns have an important role in enhancing oak germination (Mayer & Laudenslayer 1988).

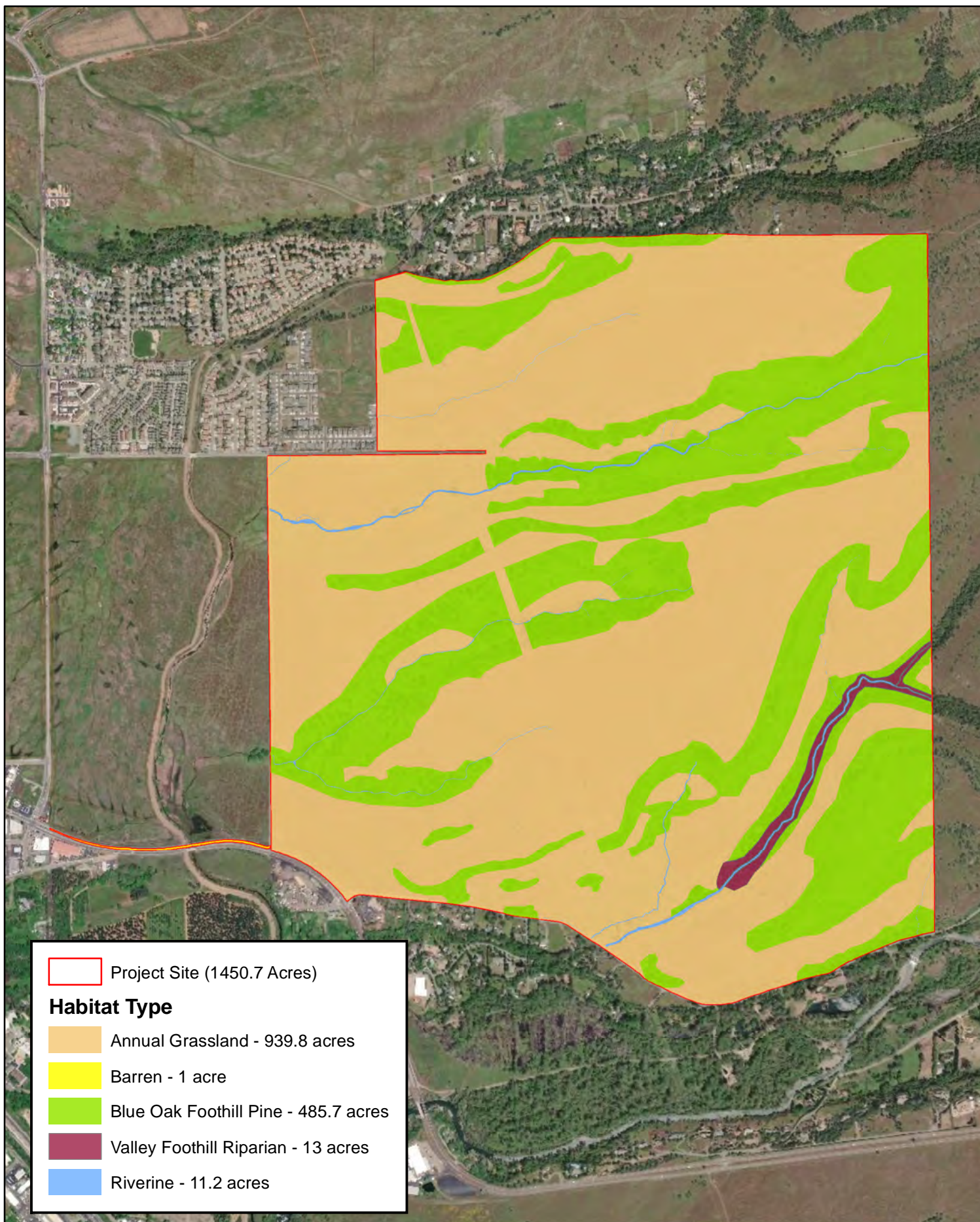
Annual Grassland

Annual grassland habitat is the dominant habitat type in the BSA. It occurs over most of the sloped land within the BSA. The dominant species within this habitat type are medusa head grass (*Elymus caput-medusae*), soft brome (*Bromus hordeaceus*), wild oats (*Avena barbata*), and rat-tail six-weeks grass (*Festuca myuros*). Common species that are found breeding in this habitat include a variety of ground nesting avian species and small mammals. Annual grassland habitats and species composition depend largely on annual precipitation, fire regimes and grazing practices (Mayer and Laudenslayer 1998). Wildlife species use grassland habitat for foraging but often require some other habitat characteristic such as rocky outcrops, cliffs, caves or ponds in order to find shelter and cover for escapement (Mayer and Laudenslayer 1998).

Aquatic

Riverine

There are several ephemeral and 2 intermittent drainages within the BSA. These drainages are characterized by bedrock or cobbly substrates, shallow flows, and are typically dry by the early summer months. Minimal annual vegetation occurs within the bed of these drainages with the banks typically dominated by a tree canopy. Many wildlife species rely on aquatic insects as a significant source of food. Many wildlife species also use riverine habitats for a source of water for hydration.



Wetlands in Annual Grassland

Depressional wetlands often occur in annual grassland habitats. Within the annual grassland portions of the BSA seasonal wetlands, vernal pools, vernal swales, and wet meadows occur. Much of the BSA is composed of sloped land, which limits the areas where ponded water can form. As such, the wetland features within the BSA tend to be concentrated on the relatively flat areas or where impediments create the conditions for ponded water (i.e. along or adjacent to roads). Where wetlands do occur, they are largely characterized by thin soils over volcanic mud flows, which has resulted in the majority of the vernal features having flashy, or short, ponding durations. Many wildlife species utilize wetland habitats for a source of water and food.

Non-Vegetated

Barren

Barren habitat is typified by non-vegetated soil, rock, paved roads and gravel. There are dirt access roads present within the BSA and portions of existing asphalt roads occur within the utility corridor. The dirt access roads are largely non-vegetated. The barren habitat type provides low quality habitat to wildlife.

Critical Habitat

There is no USFWS critical habitat present within the BSA. There is critical habitat designated for Central Valley spring-run chinook salmon (*Oncorhynchus tshawytscha*) and Central Valley steelhead (*Oncorhynchus mykiss irideus*) outside of the southeast edge of the BSA associated with Butte Creek. However, the Project activities will have no effect on Butte Creek or the designated critical habitat for Central Valley chinook salmon and steelhead.

Sensitive Natural Communities

No designated Sensitive Natural Communities (SNC) occur within the BSA. The annual grassland habitat within the BSA contains large portions of the Tuscan Formation which is derivative of mudflows and there are individual vernal pools/swales scattered over the BSA could be classified as Northern Volcanic Mudflow Vernal Pools; however, this SNC has not been designated by the State as occurring within the BSA. Further, the Project is proposing to avoid large portions of vernal pools/swales and any impacts to vernal pools/swales within the BSA will be required to be mitigated through the Clean Water Act.

Special-Status Species

Special-status species that have potential to occur in the BSA are those that fall into one of the following categories:

- Listed as threatened or endangered, or are proposed or candidates for listing under the California Endangered Species Act (CESA, 14 California Code of Regulations 670.5) or the Federal Endangered Species Act (ESA, 50 Code of Federal Regulations 17.12);

- Listed as a SSC by CDFW or protected under the California Fish and Game Code (i.e Fully Protected Species);
- Ranked by the CNPS as 1A, 1B, or 2;
- Protected under the Migratory Bird Treaty Act (MBTA);
- Protected under the Bald and Golden Eagle Protection Act; or
- Species that are otherwise protected under policies or ordinances at the local or regional level as required by the California Environmental Quality Act (CEQA, §15380).

The following special-status species have potential to occur within the BSA based on the presence of suitable habitat and/or known records of species occurrence within the BSA. A summary of assessed special-status species and their potential for occurrence within the BSA are described in **Table 1**.

Table 1. Special-status species and their potential to occur in the BSA

Common Name <i>(Scientific Name)</i>	Status Fed/State/CNPS	Associated Habitats	Potential for Occurrence
SENSITIVE NATURAL COMMUNITIES			
Northern volcanic mudflow vernal pool	_/_SNC/_	State designated land characterized by vernal pools occurring on tertiary volcanic mudflows/lahars.	<u>None</u> . This SNC has not been designated within the BSA.
PLANTS			
Big-scaled balsamroot <i>(Balsamorhiza macrolepis)</i>	_/_1B.2	Woodland, ultramafic, valley & foothill grassland (BP: March-June).	<u>None</u> . Not observed during the multiple protocol-level surveys.
Round-leaved filaree <i>(California macrophylla)</i>	_/_1B.1	Cismontane woodland, valley and foothill grasslands (BP: March-May).	<u>None</u> . Not observed during the multiple protocol-level surveys.
Flagella-like atractylocarpus <i>(Campylopodiella stenocarpa)</i>	_/_2B.2	Cismontane woodland.	<u>None</u> . Not observed during the multiple protocol-level surveys.
Pink creamsacs <i>(Castilleja rubicundula var. rubicundula)</i>	_/_1B.2	Chaparral, meadow & seep, ultramafic, valley & foothill grassland (BP: April-June).	<u>None</u> . Not observed during the multiple protocol-level surveys.

Common Name (<i>Scientific Name</i>)	Status Fed/State/CNPS	Associated Habitats	Potential for Occurrence
Dwarf downingia (<i>Downingia pusilla</i>)	_/_/2B.2	Vernal pools. (BP: March-May)	<u>None</u> . Not observed during the multiple protocol-level surveys.
Shield-bracted Monkeyflower (<i>Erythranthe glaucescens</i>)	_/_/4.3	Serpentine seeps and stream banks. (BP: February-August)	Known . Species is present within the BSA.
Butte County fritillary (<i>Fritillaria eastwoodiae</i>)	_/_/3.2		<u>None</u> . Not observed during the multiple protocol-level surveys.
Boggs Lake hedge-hyssop (<i>Gratiola heterosepala</i>)	_/_/1B.2	Freshwater marsh, Marsh & swamp, Vernal pool, Wetland. (BP: April-August)	<u>None</u> . Not observed during the multiple protocol-level surveys.
Red Bluff dwarf rush (<i>Juncus leiospermus</i> var. <i>leiospermus</i>)	_/_/1B.1	Vernal pools and mesic areas. (BP: March-May).	<u>None</u> . Not observed during the multiple protocol-level surveys.
Butte County Meadowfoam (<i>Limnanthes floccosa</i> ssp. <i>californica</i>)	FE/SE/1B.1	Vernal pools and swales (BP: March-May).	Known . Observed. The CNNDDB recorded location is inaccurate.
Woolly meadowfoam (<i>Limnanthes floccosa</i> ssp. <i>floccosa</i>)	_/_/4.2	Vernal pools and wetlands (BP: March-May).	Known . Species is present within the BSA.
Hairy Orcutt grass (<i>Orcuttia pilosa</i>)	FE/SE/1B.1	Vernal pools. (BP: May-September)	<u>None</u> . Not observed during the multiple protocol-level surveys.
Slender Orcutt grass (<i>Orcuttia tenuis</i>)	FT/SE/1B.1	Vernal pools, often gravelly. (BP: May-September)	<u>None</u> . Not observed during the multiple protocol-level surveys.
Ahart's paronychia (<i>Paronychia ahartii</i>)	_/_/1B.1	Cismontane woodland, valley & foothill grassland, vernal pool, wetland (BP: March-June).	<u>None</u> . Not observed during the multiple protocol-level surveys.
Bidwell's Knotweed (<i>Polygonum bidwelliae</i>)	_/_/4.3	Volcanic thin soils. (BP: April-July)	Known . Species is present within the BSA.

Common Name (<i>Scientific Name</i>)	Status Fed/State/CNPS	Associated Habitats	Potential for Occurrence
Butte County checkerbloom (<i>Sidalcea robusta</i>)	_/_/1B.2	Chaparral, and cismontane woodland. (BP: April-June).	<u>None</u> . Not observed during the multiple protocol-level surveys.
Butte County golden clover (<i>Trifolium jokerstii</i>)	_/_/1B.2	Vernal pools and wetland. (BP: late March-May).	<u>None</u> . Not observed during the multiple protocol-level surveys.
Greene's tuctoria (<i>Tuctoria greenei</i>)	FE/SR/1B.1	Vernal pools. (BP: May-July)	<u>None</u> . Not observed during the multiple protocol-level surveys.
INVERTEBRATES			
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	FT/_/_	Valley & foothill grassland, vernal pool, and wetland.	<u>None</u> . Not observed during the protocol-level surveys.
Vernal pool tadpole shrimp (<i>Lepidurus packardii</i>)	FE/_/_	Valley & foothill grassland, vernal pool, wetland.	<u>None</u> . Not observed during the protocol-level surveys.
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	FT/_/_	Blue elderberry shrubs usually associated with riparian areas.	None . There are no elderberry shrubs suitable for VELB occupation in the BSA.
FISH			
There are no streams within the BSA suitable for fish habitat.			
AMPHIBIANS			
Foothill yellow-legged frog (<i>Rana boylei</i>)	_/_SC/_	Streams with consistent flow, slow side waters with cobble and boulders for oviposition.	<u>None</u> . The streams within the BSA do not provide suitable habitat for this species.
Western spadefoot (<i>Spea hammondi</i>)	_/_SSC/_	Cismontane woodland, coastal scrub, valley & foothill grassland, vernal pool, and wetland.	Moderate . There is suitable habitat only within the northwestern portion of the BSA where there are deeper soils and aquatic habitat.
REPTILES			
Giant garter snake (<i>Thamnophis gigas</i>)	FT/ST/_	Agricultural wetlands, irrigation and drainage canals, low gradient	<u>None</u> . The streams within the BSA do not provide suitable habitat

Common Name (Scientific Name)	Status Fed/State/CNPS	Associated Habitats	Potential for Occurrence
		streams, marshes, ponds, sloughs, small lakes, and their associated uplands.	for this species.
Western pond turtle (<i>Emys marmorata</i>)	_/SSC/_	Perennial bodies of water with deep pools, locations for haul out, and locations for overwintering.	<u>None</u> . The streams within the BSA do not provide suitable ponded habitat for this species.
BIRDS			
Burrowing owl (<i>Athene cunicularia</i>)	_/SSC/_	Valley & foothill grassland.	<u>Known</u> . Observed once in 2008.
Swainson's hawk (<i>Buteo swainsonii</i>)	_/ST/_	Riparian forest, riparian woodland, and valley & foothill grassland.	<u>Low</u> . There is suitable foraging and nesting habitat within the BSA, but no active CNDDDB occurrences within 10 miles.
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	_/SE/_	Coniferous forests, permanent water bodies that contain ample fish stocks for food.	<u>None</u> . There is no suitable nesting or foraging habitat within the BSA.
MAMMALS			
Pallid bat (<i>Antrozous pallidus</i>)	_/SSC/_	Tree bark and cavities near water source.	<u>Moderate</u> . There is suitable roosting habitat within mature trees and snags that occur in the BSA.
Western mastiff bat (<i>Eumops perotis californicus</i>)	_/SSC/_	Natural, open areas and woodlands, and cliff crevices.	<u>None</u> . There is no suitable roosting habitat within the BSA.
CODE DESIGNATIONS			
FE = Federally-listed Endangered FT = Federally-listed Threatened FC = Federal Candidate Species		SNC = CDFW Sensitive Natural Community CRPR 1B = Rare or Endangered in California or elsewhere	

SE = State-listed Endangered ST = State-listed Threatened SR = State-listed Rare SC = State Candidate Species SSC = State Species of Special Concern FP = CDFW Fully Protected Species	CRPR 2 = Rare or Endangered in California, more common elsewhere CRPR 3 = More information is needed CRPR 4 = Plants with limited distribution 0.1 = Seriously Threatened 0.2 = Fairly Threatened 0.3 = Not very Threatened
<p>Potential for Occurrence: for plants it is considered the potential to occur during the survey period; for birds and bats it is considered the potential to breed, forage, roost, over-winter, or stop-over in the BSA during migration. Any bird or bat species could fly over the BSA, but this is not considered a potential occurrence. The categories for the potential for occurrence include:</p> <p>None: The species or natural community is known not to occur, and has no potential to occur in the BSA based on sufficient surveys, the lack suitable habitat, and/or the BSA is well outside of the known distribution of the species.</p> <p>Low: Potential habitat in the BSA is sub-marginal and/or the species is known to occur in the vicinity of the BSA.</p> <p>Moderate: Suitable habitat is present in the BSA and/or the species is known to occur in the vicinity of the BSA. Pre-construction surveys may be required.</p> <p>High: Habitat in the BSA is highly suitable for the species and there are reliable records close to the BSA, but the species was not observed. Pre-construction surveys required.</p> <p>Known: Species was detected in the BSA or a recent reliable record exists for the BSA.</p>	

Endangered, Threatened and Rare Plants

Multiple years of protocol-level botanical survey have been conducted within the BSA with the most recent survey occurring in 2017 (**Appendix C**). Based on the results of the multiple years of botanical surveys conducted, one state and federally listed plant, Butte County Meadowfoam (BCM), and 3 CNPS rank 4 plants, shield-bracted monkeyflower, Bidwell's knotweed, and wooly meadowfoam, have been observed within the BSA. No other special-status plant species have been observed within the BSA.

Butte County Meadowfoam

BCM is listed as endangered under both Federal and State Endangered Species Act (ESA), as well as listed as seriously endangered in California by the CNPS. BCM occurs in grassland areas with vernal swales, vernal pools with flashy hydrology, and secondarily along the margins of vernal pools with more persistent hydrology. Seed dormancy accounts for fluctuations in populations from year to year. BCM typically begins flowering in early March, and may continue into April or May if conditions are favorable. The current and historical BCM occurrences are found on Red Bluff pediment or strath terraces and tend to be closely aligned with the Redtough-Redswale soil complexes and secondarily aligned with the Doemill-Jokerst soil complexes.

CNDDDB Occurrences

One CNDDDB occurrence of BCM is located within the BSA (Occurrence # 51), however the location and extent of the CNDDDB location is inaccurate. The CNDDDB data provided to CDFW has submitted anonymously and inaccurately portrayed the location of BCM.

Status of Butte County Meadowfoam Occurring in the BSA

Butte County meadowfoam is **known** to occur within the BSA based on the results of the past protocol-level botanical surveys conducted. The location of the BCM population within the BSA is depicted in **Figure 6**. This population of BCM is proposed to be completely avoided with a minimum 200-250 foot buffer from planned construction activities. Therefore, the Project will have no effect on BCM.

Woolly Meadowfoam

Woolly meadowfoam is listed as a plant with limited distribution and considered fairly endangered in California by the CNPS. It is found in northern California and its range extends into Oregon. It is found in vernal pools, swales and other mesic habitats. It is an annual herb with a blooming period from March through May, and uncommonly into June. It is found at low to mid-elevation from 60 to 1335 meters above sea level (CNPS 2018).

CNDDDB Occurrences

A small population of woolly meadowfoam occurs within the BSA based on past botanical surveys conducted. This population was never reported to the CNDDDB. Further, there are recorded CNDB occurrences of woolly meadowfoam within 5 miles of the BSA.

Status of Woolly Meadowfoam Occurring in the BSA

Woolly meadowfoam is **known** to occur within the BSA. This small population of woolly meadowfoam is located in close proximity to the known BCM population present within the BSA (**Figure 6**). Due to its close proximity to BCM, this population of woolly meadowfoam is planned to be completely avoided. Therefore, the Project will have no effect on woolly meadowfoam.

Shield-bracted Monkeyflower

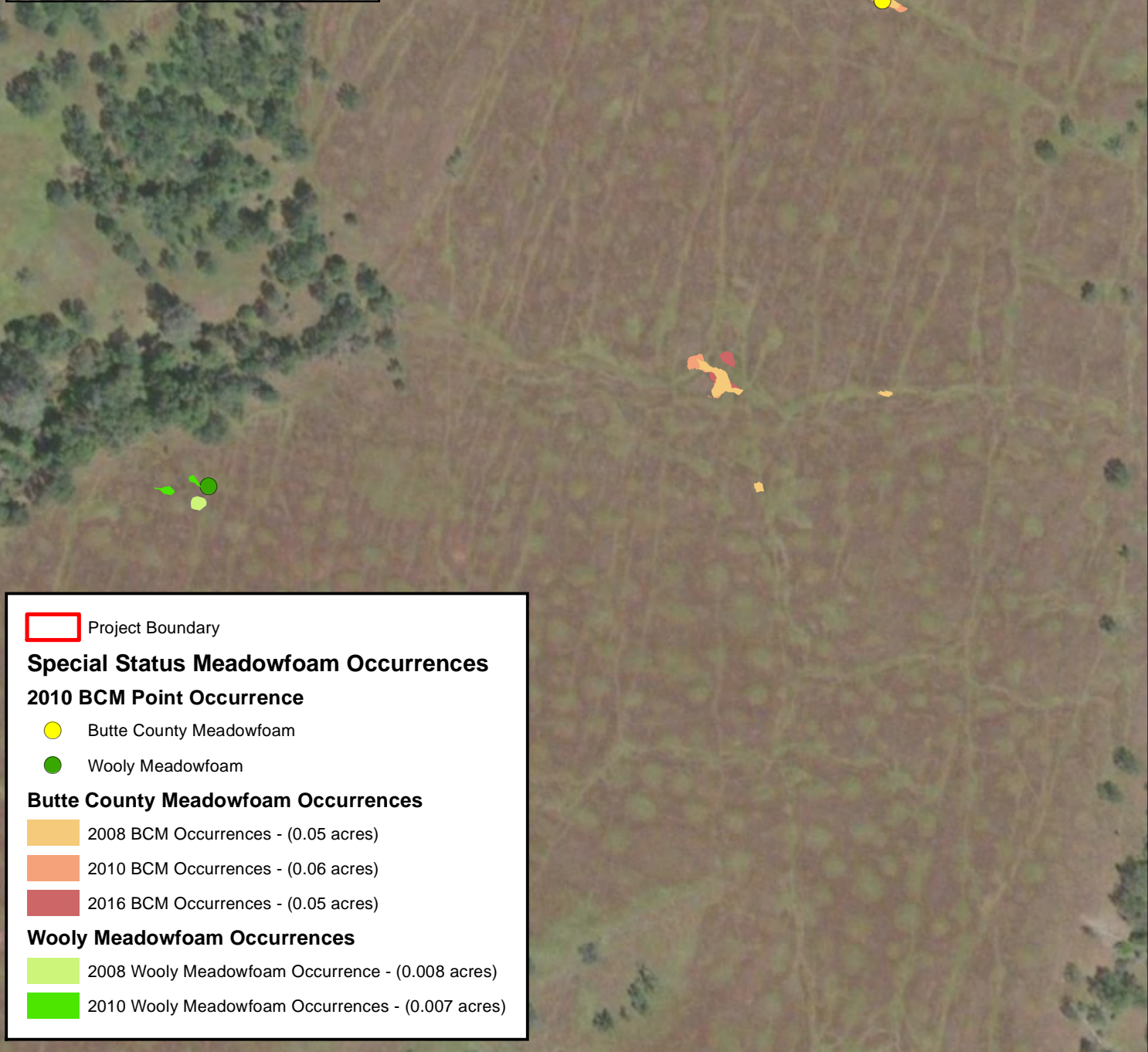
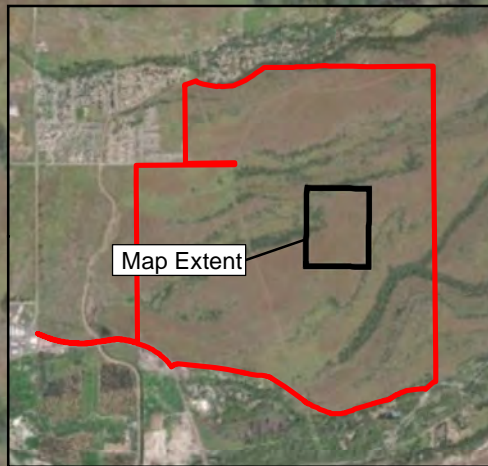
Shield-bracted monkeyflower is listed as a plant with limited distribution and is considered not very endangered in California by the CNPS. The shield-bracted monkeyflower is an annual herb that is found in seeps and streambanks. It typically can be observed blooming starting in February to August, and rarely into September depending on weather and hydric conditions.

CNDDDB Occurrences

Plant species with a CNPS Rank of 4 are often not reported to the CNDDDB. As such, there are no nearby CNDDDB occurrences of shield-bracted monkeyflower. During past botanic surveys within the BSA the shield-bracted monkeyflower was observed; however, the occurrences were not reported to the CNDDDB.

Status of Shield-bracted Monkeyflower Occurring in the BSA



Shield-bracted monkeyflower is **known** to occur within the BSA. Within the BSA shield-bracted monkeyflower has been observed within the two intermittent drainages that run through the site. With the exception of a few stream crossings, these drainages are proposed to be avoided and preserved. As such, only a minor amount of impacts may occur to shield-bracted monkeyflower due to the proposed Project.






 Project Boundary

Special Status Meadowfoam Occurrences



2010 BCM Point Occurrence

-  Butte County Meadowfoam
-  Woolly Meadowfoam

Butte County Meadowfoam Occurrences

-  2008 BCM Occurrences - (0.05 acres)
-  2010 BCM Occurrences - (0.06 acres)
-  2016 BCM Occurrences - (0.05 acres)

Woolly Meadowfoam Occurrences

-  2008 Woolly Meadowfoam Occurrence - (0.008 acres)
-  2010 Woolly Meadowfoam Occurrences - (0.007 acres)



1:2,579

0 100 200 Feet

Data Sources: ESRI, USDA NAIP
03/17/2016, Shasta County, Enplan

Valley Edge Development Project Special Status Meadowfoam Occurrence Map

Figure 6

gallaway
ENTERPRISES

GE: #16-161 Map Date: 08/21/17

Bidwell's Knotweed

Bidwell's knotweed is listed as a plant with limited distribution and is considered not very endangered in California by the CNPS. Bidwell's knotweed is a small annual plant that is found on thin volcanic soils with little to no competing vegetation. It has a blooming period of April to July.

CNDDDB Occurrences

Plant species with a CNPS Rank 4 are often not reported to the CNDDDB. As such, there are no nearby CNDDDB occurrences of Bidwell's knotweed. During past botanic surveys within the BSA Bidwell's knotweed was observed; however, the occurrences were not reported to the CNDDDB.

Status of Bidwell's Knotweed Occurring in the BSA

Bidwell's knotweed is **known** to occur within the BSA. Within the BSA Bidwell's knotweed has been observed within the thin soils on the Tuscan formation in the northern portion of annual grassland within the BSA (**Figure 5**).

Endangered, Threatened, and Special-Status Wildlife

Multiple years of surveys for wildlife species and their habitats have been conducted within the BSA. Based on the results of the multiple years of surveys conducted, the following special-status species have been determined to have potential to occur within the BSA; western spadefoot, burrowing owl, Swainson's hawk, pallid bat, western mastiff bat, and western red bat, and a variety of migratory bird and raptor species protected by the MBTA. Prior to the Camp Fire there were approximately 4 isolated blue elderberry (*Sambucus Mexicana*) shrubs located in non-riparian areas, which provided marginal habitat for valley elderberry longhorn beetles.

While there is marginally suitable habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp, protocol-level wet and dry season surveys conducted in 2015 and 2016 for these invertebrates within the BSA resulted in negative findings (**Appendix D**). As such, the Project will have no effect on vernal pool fairy shrimp or vernal pool tadpole shrimp.

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle (VELB) are listed as a federally threatened species. They are a medium sized beetle approximately ½ to 1 inch long with antennae as long as their slender bodies. It has a wide range in the Central Valley of California from Fresno County to southern Shasta County. VELB are nearly always found on or near blue elderberry and are reliant on their host species for all stages of life. Females lay their eggs on the bark and the larvae burrow into the stems once they have hatched. The larval stage may last for two years within the stem and then the larvae bore out of the stem and then become pupae. The pupae metamorphose into adults. Adults are active from March to June, foraging and mating. After metamorphosis the adult bores its way out of the stem, which is evident from small exit holes on the stems. VELB require stems of elderberries to be at least one inch in diameter to be suitable habitat for the larval stage. Often the exit holes are the only evidence that a particular elderberry bush has been used by VELB; however, it is rarely apparent that a particular elderberry is

being used by VELB. Larval galleries can be found in stems without exit holes. The massive reduction in riparian habitat from human conversion is the largest threat to this species (USFWS 2009).

CNDDDB Occurrences

There is one CNDDDB occurrence 0.75 miles south of the BSA, near the Durham mutual canal, southwest of Chico. This occurrence was documented in 1995.

Status of Valley Elderberry Longhorn Beetle Occurring in the BSA

Prior to the Camp Fire which burned most of the project area in November 2018 there were a few scattered, isolated blue elderberry bushes within non-riparian areas or growing in uplands at the base of rock walls. These shrubs were destroyed in the Camp Fire, thus there is no potential for VELB to occur within the project site.

Western Spadefoot

Western spadefoot is a California Species of Special Concern. Its range is from south Redding, through the Central Valley, and along the coast in southern California down to Baja California. It has several distinguishing features such as vertical pupils and sickle shaped keratinous “spades” on the hind feet to help dig an underground refuge that it is dormant in during the dry season. It emerges during the wet season once breeding conditions are favorable. It uses vernal pools, seasonal wetlands, cattle tanks, and pools of intermittent streams (Zeiner et al. 1990). Urban and agricultural developments are the largest threat to this species as it removes the availability of its main breeding habitat, standing rainwater pools (Nafis 2014).

CNDDDB Occurrences

There is one CNDDDB occurrence of western spadefoot breeding habitat approximately three (3) miles to the northwest of the BSA. It was in an intermittent creek within grassland, surrounded by numerous vernal pools, swales, and intermittent creeks. 500-plus tadpoles were observed in 2000 and the record was last updated in 2007. The stream is surrounded by developments, which have the potential to make the stream perennial. The other CNDDDB occurrence of western spadefoot within 5 miles of the BSA is adjacent to the 2000 occurrence and was recorded in 2006 and last updated in 2007. Many individuals were detected in the grassland. They site threats by encroaching development, night time ORV use through vernal pools, and illegal dumping.

Status of Western Spadefoot Occurring in the BSA

Since the western spadefoot spends most of its life underground, they require deep enough soils to burrow in. There is only one portion of the BSA that contains suitable aquatic habitat and deep enough soils to potentially support western spadefoot. This potential habitat is in the proposed preserve area in the northwestern portion of the BSA (**Figure 5**). Due to the shallow soils over much of the remaining portions of the BSA and the flashy nature of the wetlands present, there is no habitat for western spadefoot elsewhere in the BSA. As such, the Project will have no effect on the western spadefoot.

Burrowing Owl

The burrowing owl is listed as a California Species of Special Concern and is federally protected under the Migratory Bird Treaty Act. It is a small migratory owl that lives in grasslands and takes over the burrows of small mammals for its nest. Distribution of burrowing owls is from Canada to Central Mexico. Some burrowing owls winter in California, while others use the habitat during the summer. The burrowing owl in California has been extirpated as a breeding species during the last 10-15 years from approximately 8% of its former range. Breeding in central California has been reduced to only three isolated populations. Threats to burrowing owls include conversion of habitat to agriculture and urban development, to the widespread eradication of small burrowing mammals such as ground squirrels (USFWS 2003).

CNDDDB Occurrences

There is one CNDDDB occurrence of burrowing owls within the northwest boundary of the BSA (Occurrence # 1029, **Figure 4**). This occurrence was first recorded in 2006 and updated in 2008.

Status of Burrowing Owl Occurring in the BSA

Adult burrowing owls have been observed within the northwestern portion of the BSA located approximately 0.25 miles east of the intersection of Doemill Road and Potter Road. Two separate burrows have been observed in this portion of the BSA. The northern burrow was located at the base of a lava rock wall where two adults were seen. The southern burrow was in a pile of rocks, where one adult was seen. Burrowing owls have not been observed since 2008 in any subsequent survey.

Swainson's Hawk

Swainson's hawk is listed as threatened under California ESA. The number of breeding pairs estimated in 2005 was at ~12% of historical levels. The Swainson's hawk is a medium sized hawk with adults possessing dark feathers on the head and breast band with a lighter belly. It is adapted to the open grasslands, and has become increasingly dependent on agriculture, especially alfalfa crops, as native communities are converted to agricultural lands. The diet of the Swainson's hawk in California is varied, but mainly consists of small rodents called voles; however other small mammals, birds, and insects are also taken. Swainson's Hawks often nest peripheral to riparian systems. They will also use lone trees in agricultural fields or pastures and roadside trees when available and adjacent to suitable foraging habitat. The main threat to Swainson's hawks is the loss of habitat (CDFW 2014).

CNDDDB Occurrences

There are 8 CNDDDB occurrences within 10 miles of the BSA; however, none of these occurrences are recent, with the most recent observed in 1998 and has not since been updated.

Status of Swainson's Hawk Occurring in the BSA

There is marginal habitat for Swainson's hawk within the BSA. The grasslands within the BSA provide marginal foraging habitat and the oak woodlands and individual oak trees extending into the grassland within the BSA provide suitable hunting perches and nesting habitat. However, there are no recent

CNDDDB occurrences of Swainson's hawks within 10 miles of the BSA. As such, there is only a low potential for Swainson's hawk presence within the BSA.

Pallid Bat

The pallid bat is a California Species of Special Concern. The pallid bat is a large, light colored bat known for taking larger, slow moving, low flying insects and occasionally eating them on the ground instead of on the wing. The pallid bat is found in arid to semi-arid regions of the western United States from Canada to Mexico. Pallid bats do not migrate long distances between their summer and winter sites (Sherwin 2005). The Pallid bat has been recorded in many different diurnal roosting habitats such as buildings, barns, cliffs, rock crevices, caves, mines, bridges and hollow trees (CDFG 1988-1990). Ideal diurnal roosts commonly provide an unobstructed entrance, are high above ground, have warm temperatures and are inaccessible to predators. Night roosts can be more exposed and include porches, trees, and open buildings. Females have 1-2 pups per year. Mating occurs from October to February, with parturition occurring from late April to July, and weaning in August. Maternity colonies disperse between August and October. Pallid bats' tendency to roost gregariously and their relative sensitivity to disturbance make them vulnerable to mass displacement. Maternity colonies and hibernating bats are especially sensitive to disturbance. Loss or modification of foraging habitat due to urban development poses a potential threat.

CNDDDB Occurrences

There is one CNDDDB occurrence two (2) miles to the west of the BSA as a non-specific area in Chico, CA. It was recorded in 1992 and last updated in 2006.

Status of Pallid Bat Occurring in the BSA

The BSA contains suitable habitat for the pallid bat within the oak woodlands onsite (**Figure 5**). The oak woodlands within the BSA contain mature blue oaks and snags that have cavities that are suitable roosting habitat for the pallid bat. The expanses of oak woodlands in the BSA also provide suitable diurnal roosting habitat for the pallid bat. In addition, the Project site contains little human disturbance and is bordered by natural areas to the east and west.

Migratory Birds and Raptors

Nesting birds are protected under the Migratory Bird Treaty Act (MBTA) (16 USC 703) and the California Fish and Game Code (CFG) (§3503). The MBTA (16 USC §703) prohibits the killing of migratory birds or the destruction of their occupied nests and eggs except in accordance with regulations prescribed by the USFWS. The bird species covered by the MBTA includes nearly all of those that breed in North America, excluding introduced (i.e. exotic) species (50 Code of Federal Regulations §10.13). Activities that involve the removal of vegetation including trees, shrubs, grasses, and forbs or ground disturbance has the potential to affect bird species protected by the MBTA.

The CFG (§3503.5) states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks, eagles, and falcons) or Strigiformes (owls) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant

thereto.” Take includes the disturbance of an active nest resulting in the abandonment or loss of young. The CFGC (§3503) also states that “it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.”

CNDDDB Occurrences

The majority of migratory birds and raptors protected under the MBTA and CFGC are not recorded on the CNDDDB because they are abundant and widespread.

Status of Migratory Birds and Raptors occurring in the BSA

There is suitable nesting habitat for a variety of ground, shrub and tree nesting avian species throughout the BSA.

REGULATORY FRAMEWORK

The following describes federal, state, and local environmental laws and policies that are relevant to the CEQA review process.

Federal

Waters of the United States, Clean Water Act, Section 404

The Corps and the U.S. Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into jurisdictional waters of the United States, under the Clean Water Act (§404). The term “waters of the United States” is an encompassing term that includes “wetlands” and “other waters.” Wetlands have been defined for regulatory purposes as follows: “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3, 40 CFR 230.3). Wetlands generally include swamps, marshes, bogs, and similar areas.” other waters of the United States are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (i.e., hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4).

The Corps may issue either individual permits on a case-by-case basis or general permits on a program level. General permits are pre-authorized and are issued to cover similar activities that are expected to cause only minimal adverse environmental effects. Nationwide permits are general permits issued to cover particular fill activities. All nationwide permits have general conditions that must be met for the permits to apply to a particular project, as well as specific conditions that apply to each nationwide permit.

Federal Endangered Species Act

The United States Congress passed the Federal Endangered Species Act (ESA) in 1973 to protect species that are endangered or threatened with extinction. The ESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

Under the ESA, species may be listed as either “endangered” or “threatened.” Endangered means a species is in danger of extinction throughout all or a significant portion of its range. Threatened means a species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. All species of plants and animals, except non-native species and pest insects, are eligible for listing as endangered or threatened. The USFWS also maintains a list of “candidate” species. Candidate species are species for which there is enough information to warrant proposing them for listing, but that have not yet been proposed. “Proposed” species are those that have been proposed for listing, but have not yet been listed.

The ESA makes it unlawful to “take” a listed animal without a permit. Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” Through regulations, the term “harm” is defined as “an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.”

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC §703) prohibits the killing of migratory birds or the destruction of their occupied nests and eggs except in accordance with regulations prescribed by the USFWS. The bird species covered by the MBTA includes nearly all of those that breed in North America, excluding introduced (i.e. exotic) species (50 Code of Federal Regulations §10.13). Activities that involve the removal of vegetation including trees, shrubs, grasses, and forbs or ground disturbance has the potential to affect bird species protected by the MBTA. Thus, vegetation removal and ground disturbance in areas with breeding birds should be conducted outside of the breeding season (approximately March 1 through August 31 in the Central Valley). If vegetation removal or ground disturbance activities are conducted during the breeding season, then a qualified biologist must determine if there are any nests of bird species protected under the MBTA present in the construction area prior to commencement of construction. If active nests are located or presumed present, then appropriate avoidance measures (e.g. spatial or temporal buffers) must be implemented.

State of California

California Endangered Species Act

The California Endangered Species Act (CESA) is similar to the ESA, but pertains to state-listed endangered and threatened species. The CESA requires state agencies to consult with the CDFW when preparing documents to comply with the California Environmental Quality Act (CEQA). The purpose is to ensure that the actions of the lead agency do not jeopardize the continued existence of a listed species or result in the destruction, or adverse modification of habitat essential to the continued existence of those species. In addition to formal listing under the federal and state endangered species acts, “species of special concern” receive consideration by CDFW. Species of special concern are those whose numbers, reproductive success, or habitat may be threatened.

California Fish and Game Code (§3503.5)

The California Fish and Game Code (CFGF) (§3503.5) states that it is “unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks, eagles, and falcons) or Strigiformes (all owls except barn owls) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Take includes the disturbance of an active nest resulting in the abandonment or loss of young. The CFGF (§3503) also states that “it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.”

Lake and Streambed Alteration Agreement, CFGF (§1602)

The CDFW is a trustee agency that has jurisdiction under the CFGF (§1600 et seq.). The California Fish and Game Code (§1602), requires that a state or local government agency, public utility, or private entity must notify CDFW if a proposed Project will “substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds... except when the department has been notified pursuant to Section 1601.” If an existing fish or wildlife resource may be substantially adversely affected by the activity, CDFW may propose reasonable measures that will allow protection of those resources. If these measures are agreeable to the parties involved, they may enter into an agreement with CDFW identifying the approved activities and associated mitigation measures.

Clean Water Act, Section 401

The Clean Water Act (§401) requires water quality certification and authorization for placement of dredged or fill material in wetlands and Other Waters of the United States. In accordance with the Clean Water Act (§401), criteria for allowable discharges into surface waters have been developed by the State Water Resources Control Board, Division of Water Quality. The resulting requirements are used as criteria in granting National Pollutant Discharge Elimination System (NPDES) permits or waivers, which

are obtained through the Regional Water Quality Control Board (RWQCB) per the Clean Water Act (§402). Any activity or facility that will discharge waste (such as soils from construction) into surface waters, or from which waste may be discharged, must obtain an NPDES permit or waiver from the RWQCB. The RWQCB evaluates an NPDES permit application to determine whether the proposed discharge is consistent with the adopted water quality objectives of the basin plan.

California Environmental Quality Act Guidelines §15380

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines §15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled based on the definition in the ESA and the section of the CFGC dealing with rare, threatened, and endangered plants and animals. The CEQA Guidelines (§15380) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFW (e.g. candidate species, species of concern) would occur. Thus, CEQA provides an agency with the ability to protect a species from a Project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

Rare and Endangered Plants

The California Native Plant Society (CNPS) maintains a list of plant species native to California with low population numbers, limited distribution, or otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. Potential impacts to populations of CNPS California Rare Plant Rank (CRPR) plants receive consideration under CEQA review. The CNPS CRPR categorizes plants as follows:

- Rank 1A: Plants presumed extinct in California;
- Rank 1B: Plants rare, threatened, or endangered in California or elsewhere;
- Rank 2A: Plants presumed extirpated or extinct in California, but not elsewhere;
- Rank 2B: Plants rare, threatened, or endangered in California, but more numerous elsewhere;
- Rank 3: Plants about which we need more information; and
- Rank 4: Plants of limited distribution.

The California Native Plant Protection Act (CFGF §1900-1913) prohibits the taking, possessing, or sale within the state of any plants with a state designation of rare, threatened, or endangered as defined by CDFW. An exception to this prohibition allows landowners, under specific circumstances, to take listed plant species, provided that the owners first notify CDFW and give the agency at least 10 days to retrieve (and presumably replant) the plants before they are destroyed. Fish and game Code §1913 exempts from the 'take' prohibition "the removal of endangered or rare native plants from a canal, lateral channel, building site, or road, or other right of way."

CONCLUSIONS AND RECOMMENDATIONS

Endangered, Threatened, and Rare Plants

The Project has been designed to completely avoid impacts to BCM and wooly meadowfoam. As such, the Project will have no effect on BCM or wooly meadowfoam. However, due to their locations within the BSA, the Project may impact populations of the CNPS Rank 4 species shield-bracted monkeyflower and Bidwell's knotweed.

CNPS Rank 4 Plant Species

Mitigation options recognized by the CNPS for impacts to shield-bracted monkeyflower and Bidwell's knotweed include:

1. The Project proponent should design the Project to avoid or minimize impacts to areas where special-status botanical species occur to the greatest extent feasible and maintain protective elements such as, fencing, open space or conservation easements, and/or buffer zones around suitable habitat where special-status botanical species occur prior to construction activities and throughout construction activities and/or;
2. The Project proponent may restore or preserve a designated area, which contains suitable habitat elements, within the Project site to accommodate for species impacted by Project activities. The restored or preserved area will use transplants, artificial propagations or seed transfers from impacted populations to populate the restored or preserved area using guidelines from the California Native Plant Society Rare Plant Scientific Advisory Committee (1998) Policy On Mitigation Guidelines Regarding Impacts To Rare, Threatened, And Endangered Plants, and/or;
3. If the Project proponent cannot completely avoid impacts to special-status botanical species then the CDFW must be notified and given a reasonable opportunity to harvest plants or seeds.

Endangered, Threatened, and Special-Status Wildlife

The Project will have no effect on vernal pool fairy shrimp, vernal pool tadpole shrimp or western spadefoot. However, the Project may result in impacts to pallid bats, burrowing owls, Swainson's hawks and a variety of other migratory birds and raptors.

Pallid Bats

To minimize impacts to bat species protected by the CFGC the following are recommended avoidance and minimization measures:

- Mature trees should be removed and/or fallen between September 16 – March 15 outside of the bat maternity season. Trees should be removed at dusk to minimize impacts to roosting bats.

Burrowing Owls

To minimize impacts to burrowing owls the following are recommended avoidance and minimization measures:

- Construction activities should occur outside of the western burrowing owl nesting season (February 1 – August 31). If construction cannot be conducted outside of the nesting season then the following avoidance and minimization measures shall be implemented.
 - For construction occurring during the breeding season (February 1 – August 31), prior to any ground disturbing activities within the site, a pre-construction survey for western burrowing owls shall be conducted by a qualified biologist within 14 days of ground disturbing activities per the recommendations described in the Burrowing Owl Survey Protocol and Mitigation Guidelines (California Burrowing Owl Consortium 1993).
 - If an active burrowing owl nest is observed within 250 feet of the project footprint, then a 250 foot buffer should be established and CDFW contacted for further consultation.

Swainson's Hawks

The following are avoidance and minimization measures recommended in order to avoid and minimize potential impacts to Swainson's hawks.

- If construction is to take place during the nesting season (March 1st – August 31st) then a pre-construction survey for Swainson's hawk will be conducted by a qualified biologist. The survey shall be conducted within seven (7) days prior to the start of construction activities to determine presence or absence of nesting Swainson's hawk.
- If a Swainson's hawk is observed nesting within the project area, or within ¼ mile of the project area, then a ¼ mile to 500 foot radius buffer will be established depending on the nesting pair's level of disturbance around construction equipment. Fencing or other appropriate equipment will be used to indicate the buffer. Work will not be allowed in the buffer until the young have fledged (able to fly) and are no longer dependent on the nest or the nest fails as determined by a qualified biologist.

Migratory Birds and Raptors

To avoid impacts to avian species protected under the MBTA and the CFGC the following are recommended avoidance and minimization measures for migratory birds and raptors:

- Project activities including site grubbing and vegetation removal shall be initiated outside of the bird nesting season (February 1 – August 31).
- If Project activities cannot be initiated outside of the bird nesting season then the following will occur:
 - A qualified biologist will conduct a pre-construction survey within 250 feet of the BSA, where accessible, within 7 days prior to the start of Project activities.
 - If an active nest (i.e. containing egg(s) or young) is observed within the BSA or in an area adjacent to the BSA where impacts could occur, then a species protection buffer will be established. The species protection buffer will be defined by the qualified biologist based on the species, nest type and tolerance to disturbance. Construction activity shall be prohibited within the buffer zones until the young have fledged or the nest fails as determined by a qualified biologist. Nests shall be monitored by a qualified biologist once per week and a report submitted to the CEQA lead agency weekly.

Other Natural Resources

Waters of the United States

If the Project actions affect the ordinary high water mark and/or vegetation associated with any Waters of the U.S. which include but are not limited to, intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands,” sloughs, prairie potholes, wet meadows, playa lakes, vernal pools or natural ponds, then the Project proponent will need to obtain the following:

- Prior to any discharge or fill material into Waters of the U.S., authorization under a Nationwide Permit or Individual Permit shall be obtained from the COE. For fill requiring a COE permit, a water quality certification from the Regional Water Quality Board (Clean Water Act §401) shall also be obtained prior to discharge of dredged or fill material.
- Prior to any activities that would obstruct the flow of or alter the bed, channel, or bank of any perennial, intermittent or ephemeral creeks, notification of streambed alteration shall be submitted to the CDFW, and if required, a Lake and Streambed Alteration Agreement (§1602) shall be obtained.

Mitigation requirements for the fill of waters of the U.S. will be implemented through an onsite restoration plan, and/or an In Lieu Fund and/or a certified conservation bank with a Service Area that

covers the proposed Project area. These agreements, certifications and permits may be contingent upon successful completion of the CEQA process.

Oak Woodland

The BSA contains a significant area of oak woodlands. An oak canopy evaluation was conducted within the BSA by Gallaway Enterprises in 2017. This oak canopy evaluation involved the GIS mapping of the oak canopy within the BSA and the use of survey plots to ground-truth and collect data to estimate the number of trees within the oak canopy mapped. The resulting acres of oak canopy mapped was a total of 239 acres with the average of 23 trees per an acre of canopy. A minimal amount of impacts to oak trees will occur due to the initial construction of the basic infrastructure associated with the Project. Due to the minimal amount of impacts, the design of the overall project to minimize impacts and the proposed preservation of a total of 173 acres of oak woodland canopy within the BSA, no mitigation is required for the initial infrastructure construction activities. The construction of the subsequent phases of the Project will require compliance with the City of Chico CMC 16.66 Tree Preservation Regulations since the Project site is proposed to be annexed by the City of Chico prior to the start of the development activities.

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Cate Davis. GIS Analyst and Cultural Resource Specialist. Master of Arts in Anthropology with a specialization in GIS applications and land use studies, California State University, Chico. Miss. Davis has over 4 years of experience working with GIS while incorporating surveying applications, analysis of datasets, and collection of field data in order to create professional quality graphics and reports.

Appendix A

United States Fish and Wildlife Services, IPAC Species List

California Native Plant Society, Species List

California Department of Fish and Wildlife, California Natural Diversity Database, Species List



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

Phone: (916) 414-6600 Fax: (916) 414-6713



In Reply Refer To:

December 17, 2018

Consultation Code: 08ESMF00-2019-SLI-0617

Event Code: 08ESMF00-2019-E-01855

Project Name: Valley's Edge Development

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2019-SLI-0617

Event Code: 08ESMF00-2019-E-01855

Project Name: Valley's Edge Development

Project Type: DEVELOPMENT

Project Description: The project is a mixed use community development project which includes residential and commercial buildings as well as a school, parks, and open space preserves.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/39.72081957651404N121.7637227531963W>



Counties: Butte, CA

Endangered Species Act Species

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Reptiles

NAME	STATUS
Giant Garter Snake <i>Thamnophis gigas</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle <i>Desmocerus californicus dimorphus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850 Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp <i>Branchinecta conservatio</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp <i>Lepidurus packardii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Butte County Meadowfoam <i>Limnanthes floccosa ssp. californica</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4223	Endangered
Greene's Tuctoria <i>Tuctoria greenei</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1573	Endangered
Hairy Orcutt Grass <i>Orcuttia pilosa</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2262	Endangered
Hoover's Spurge <i>Chamaesyce hooveri</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3019	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

CNPS Inventory of Rare and Endangered Plants

Status: Plant Press Manager window with 24 items - Mon, Dec. 17, 2018 19:35 ET c

- During each visit, we provide you with an empty "Plant Press" for collecting items of interest.
- Several report formats are available. Use the CSV and XML options to download raw data.

Reformat list as: Standard List - with Plant Press controls ▼

DELETE unchecked items

☐ check all

☐ check none

open	save	scientific	common	family	CNPS
	<input checked="" type="checkbox"/>	<u>Balsamorhiza macrolepis</u>	big-scale balsamroot	Asteraceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Cardamine pachystigma</u> var. <u>dissectifolia</u>	dissected-leaved toothwort	Brassicaceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Castilleja rubicundula</u> var. <u>rubicundula</u>	pink creamsacs	Orobanchaceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Clarkia gracilis</u> ssp. <u>albicaulis</u>	white-stemmed clarkia	Onagraceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Cryptantha crinita</u>	silky cryptantha	Boraginaceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Downingia pusilla</u>	dwarf downingia	Campanulaceae	List 2B.2
	<input checked="" type="checkbox"/>	<u>Euphorbia hooveri</u>	Hoover's spurge	Euphorbiaceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Fritillaria eastwoodiae</u>	Butte County fritillary	Liliaceae	List 3.2
	<input checked="" type="checkbox"/>	<u>Fritillaria pluriflora</u>	adobe-lily	Liliaceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Gratiola heterosepala</u>	Boggs Lake hedge-hyssop	Plantaginaceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Hibiscus lasiocarpus</u> var. <u>occidentalis</u>	woolly rose-mallow	Malvaceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Imperata brevifolia</u>	California satintail	Poaceae	List 2B.1
	<input checked="" type="checkbox"/>	<u>Lasthenia glabrata</u> ssp. <u>coulteri</u>	Coulter's goldfields	Asteraceae	List 1B.1
	<input checked="" type="checkbox"/>	<u>Limnanthes floccosa</u> ssp. <u>californica</u>	Butte County meadowfoam	Limnanthaceae	List 1B.1
	<input checked="" type="checkbox"/>	<u>Monardella venosa</u>	veiny monardella	Lamiaceae	List 1B.1
	<input checked="" type="checkbox"/>	<u>Orcuttia pilosa</u>	hairy Orcutt grass	Poaceae	List 1B.1
	<input checked="" type="checkbox"/>	<u>Orcuttia tenuis</u>	slender Orcutt grass	Poaceae	List 1B.1
	<input checked="" type="checkbox"/>	<u>Paronychia ahartii</u>	Ahart's paronychia	Caryophyllaceae	List 1B.1
	<input checked="" type="checkbox"/>	<u>Rhynchospora californica</u>	California beaked-rush	Cyperaceae	List 1B.1
	<input checked="" type="checkbox"/>	<u>Rhynchospora capitellata</u>	brownish beaked-rush	Cyperaceae	List 2B.2
	<input checked="" type="checkbox"/>	<u>Sagittaria sanfordii</u>	Sanford's arrowhead	Alismataceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Sidalcea robusta</u>	Butte County checkerbloom	Malvaceae	List 1B.2
	<input checked="" type="checkbox"/>	<u>Stuckenia filiformis</u> ssp. <u>alpina</u>	slender-leaved pondweed	Potamogetonaceae	List 2B.2
	<input checked="" type="checkbox"/>	<u>Tuctoria greenei</u>	Greene's tuctoria	Poaceae	List 1B.1

DELETE unchecked items

check all

check none



Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad IS (Chico (3912167) OR Richardson Springs (3912177) OR Paradise West (3912176) OR Hamlin Canyon (3912166))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
adobe-lily <i>Fritillaria pluriflora</i>	PMLIL0V0F0	None	None	G2G3	S2S3	1B.2
Ahart's buckwheat <i>Eriogonum umbellatum</i> var. <i>ahartii</i>	PDPGN086UY	None	None	G5T3	S3	1B.2
Ahart's paronychia <i>Paronychia ahartii</i>	PDCAR0L0V0	None	None	G3	S3	1B.1
American peregrine falcon <i>Falco peregrinus anatum</i>	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
bald eagle <i>Haliaeetus leucocephalus</i>	ABNKC10010	Delisted	Endangered	G5	S3	FP
big-scale balsamroot <i>Balsamorhiza macrolepis</i>	PDAST11061	None	None	G2	S2	1B.2
brownish beaked-rush <i>Rhynchospora capitellata</i>	PMCYP0N080	None	None	G5	S1	2B.2
burrowing owl <i>Athene cunicularia</i>	ABNSB10010	None	None	G4	S3	SSC
Butte County checkerbloom <i>Sidalcea robusta</i>	PDMAL110P0	None	None	G2	S2	1B.2
Butte County fritillary <i>Fritillaria eastwoodiae</i>	PMLIL0V060	None	None	G3Q	S3	3.2
Butte County meadowfoam <i>Limnanthes floccosa</i> ssp. <i>californica</i>	PDLIM02042	Endangered	Endangered	G4T1	S1	1B.1
Butte County morning-glory <i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i>	PDCON04012	None	None	G5T3	S3	4.2
California beaked-rush <i>Rhynchospora californica</i>	PMCYP0N060	None	None	G1	S1	1B.1
California black rail <i>Laterallus jamaicensis coturniculus</i>	ABNME03041	None	Threatened	G3G4T1	S1	FP
California linderiella <i>Linderiella occidentalis</i>	ICBRA06010	None	None	G2G3	S2S3	
California satintail <i>Imperata brevifolia</i>	PMPOA3D020	None	None	G4	S3	2B.1
chinook salmon - Central Valley spring-run ESU <i>Oncorhynchus tshawytscha</i> pop. 6	AFCHA0205A	Threatened	Threatened	G5	S1	
coast horned lizard <i>Phrynosoma blainvillii</i>	ARACF12100	None	None	G3G4	S3S4	SSC
dissected-leaved toothwort <i>Cardamine pachystigma</i> var. <i>dissectifolia</i>	PDBRA0K1B1	None	None	G3G5T2Q	S2	1B.2



Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
flagella-like atractylocarpus <i>Campylopodiella stenocarpa</i>	NBMUS84010	None	None	G5	S1?	2B.2
foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Great Valley Cottonwood Riparian Forest <i>Great Valley Cottonwood Riparian Forest</i>	CTT61410CA	None	None	G2	S2.1	
Great Valley Mixed Riparian Forest <i>Great Valley Mixed Riparian Forest</i>	CTT61420CA	None	None	G2	S2.2	
Great Valley Valley Oak Riparian Forest <i>Great Valley Valley Oak Riparian Forest</i>	CTT61430CA	None	None	G1	S1.1	
Greene's tuctoria <i>Tuctoria greenei</i>	PMPOA6N010	Endangered	Rare	G1	S1	1B.1
hoary bat <i>Lasiurus cinereus</i>	AMACC05030	None	None	G5	S4	
Hoover's spurge <i>Euphorbia hooveri</i>	PDEUP0D150	Threatened	None	G1	S1	1B.2
least Bell's vireo <i>Vireo bellii pusillus</i>	ABPBW01114	Endangered	Endangered	G5T2	S2	
North American porcupine <i>Erethizon dorsatum</i>	AMAFJ01010	None	None	G5	S3	
Northern Hardpan Vernal Pool <i>Northern Hardpan Vernal Pool</i>	CTT44110CA	None	None	G3	S3.1	
Northern Volcanic Mud Flow Vernal Pool <i>Northern Volcanic Mud Flow Vernal Pool</i>	CTT44132CA	None	None	G1	S1.1	
pallid bat <i>Antrozous pallidus</i>	AMACC10010	None	None	G5	S3	SSC
pink creamsacs <i>Castilleja rubicundula</i> var. <i>rubicundula</i>	PDSCR0D482	None	None	G5T2	S2	1B.2
Red Bluff dwarf rush <i>Juncus leiospermus</i> var. <i>leiospermus</i>	PMJUN011L2	None	None	G2T2	S2	1B.1
silver-haired bat <i>Lasionycteris noctivagans</i>	AMACC02010	None	None	G5	S3S4	
slender-leaved pondweed <i>Stuckenia filiformis</i> ssp. <i>alpina</i>	PMPOT03091	None	None	G5T5	S2S3	2B.2
steelhead - Central Valley DPS <i>Oncorhynchus mykiss irideus</i> pop. 11	AFCHA0209K	Threatened	None	G5T2Q	S2	
Swainson's hawk <i>Buteo swainsoni</i>	ABNKC19070	None	Threatened	G5	S3	
tricolored blackbird <i>Agelaius tricolor</i>	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	IICOL48011	Threatened	None	G3T2	S2	



Selected Elements by Common Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
veiny monardella <i>Monardella venosa</i>	PDLAM18082	None	None	G1	S1	1B.1
vernal pool fairy shrimp <i>Branchinecta lynchi</i>	ICBRA03030	Threatened	None	G3	S3	
vernal pool tadpole shrimp <i>Lepidurus packardii</i>	ICBRA10010	Endangered	None	G4	S3S4	
western mastiff bat <i>Eumops perotis californicus</i>	AMACD02011	None	None	G5T4	S3S4	SSC
western pond turtle <i>Emys marmorata</i>	ARAAD02030	None	None	G3G4	S3	SSC
western spadefoot <i>Spea hammondi</i>	AAABF02020	None	None	G3	S3	SSC
white-stemmed clarkia <i>Clarkia gracilis ssp. albicaulis</i>	PDONA050J1	None	None	G5T3	S3	1B.2
woolly meadowfoam <i>Limnanthes floccosa ssp. floccosa</i>	PDLIM02043	None	None	G4T4	S3	4.2
woolly rose-mallow <i>Hibiscus lasiocarpus var. occidentalis</i>	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Yuma myotis <i>Myotis yumanensis</i>	AMACC01020	None	None	G5	S4	

Record Count: 50

Appendix B

2017 Observed Wildlife Species List

Wildlife Species Observed within the Valley's Edge BRA April 5 and June 1, 2017	
Scientific Name	Common Name
Birds	
<i>Aphelocoma californica</i>	Scrub jay
<i>Baeolophus inornatus</i>	Oak titmouse
<i>Buteo lineatus</i>	Red-shouldered hawk
<i>Callipepla californica</i>	California quail
<i>Calypte anna</i>	Anna's Hummingbird
<i>Carduelis psaltria</i>	Lesser gold finch
<i>Cathartes aura</i>	Turkey vulture
<i>Charadrius vociferus</i>	Killdeer
<i>Colaptes auratus</i>	Northern flicker
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	Common Raven
<i>Empidonax difficilis</i>	Pacific Slope Flycatcher
<i>Geothlypis trichas</i>	Common yellowthroat
<i>Haemorhous mexicanus</i>	House finch
<i>Icterus bullockii</i>	Bullock's oriole
<i>Megaceryle alcyon</i>	Belted Kingfisher
<i>Melanerpes formicivorus</i>	Acorn woodpecker
<i>Meleagris gallopavo</i>	Wild Turkey
<i>Melospiza melodia</i>	Song Sparrow
<i>Melospiza crissalis</i>	California Towhee
<i>Mimus polyglottos</i>	Northern mockingbird
<i>Molothrus ater</i>	Brown-headed cowbird
<i>Passer domesticus</i>	House sparrow
<i>Picoides nuttallii</i>	Nuttall's woodpecker
<i>Pipilo maculatus</i>	Spotted Towhee
<i>Poecile atricapillus</i>	Black Capped Chickadee
<i>Psaltiriparus minimus</i>	Bushtit
<i>Sayornis nigricans</i>	Black phoebe
<i>Sialia mexicana</i>	Western Bluebird
<i>Sitta carolinensis</i>	White-breasted nuthatch
<i>Spinus tristis</i>	Gold finch
<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow
<i>Streptopelia decaocto</i>	Eurasian Collard-Dove
<i>Sturnus vulgaris</i>	European starling
<i>Tachycineta bicolor</i>	Tree swallow
<i>Tyrannus verticalis</i>	Western kingbird
<i>Zenaidura macroura</i>	Mourning dove
<i>Zonotrichia atricapilla</i>	Golden-crowned Sparrow
Mammals	
<i>Canis latrans</i>	Coyote
<i>Lepus californicus</i>	Black-tailed jackrabbit
<i>Sciurus griseus</i>	Western gray squirrel
Reptiles and Amphibians	
<i>Crotalus oreganus</i>	Western rattlesnake
<i>Sceloporus occidentalis</i>	Western fence lizard
<i>Pseudacris regilla</i>	Pacific chorus frog

Appendix C

2017 Rare Plant Survey Report

gallaway ENTERPRISES

117 Meyers Street • Suite 120 • Chico CA 95928 • 530-332-9909

July 24, 2017

Valley's Edge, Inc.
Attn: Bill Brouhard
2550 Lakewest Drive, Suite 50
Chico, CA 95928

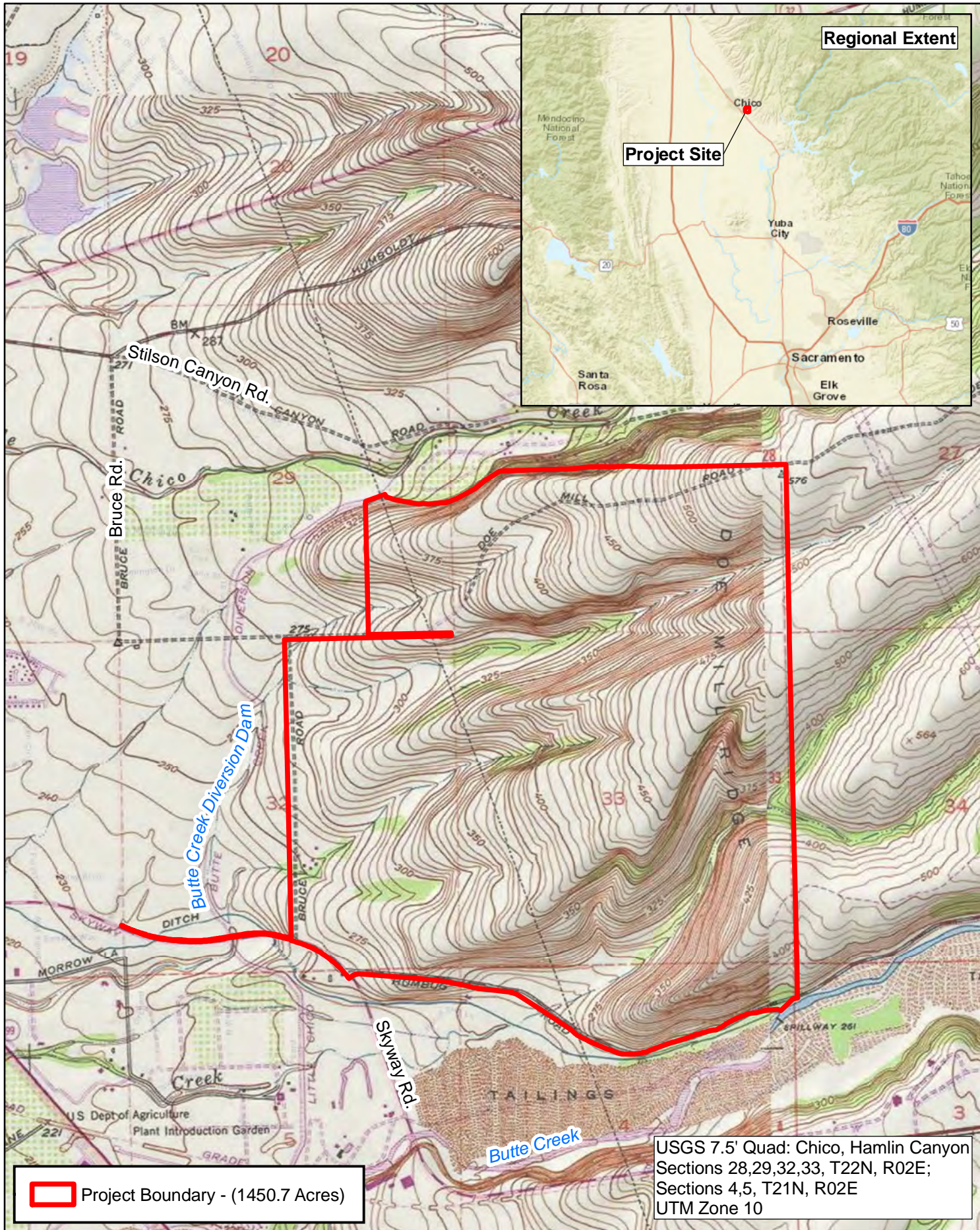
Dear Mr. Brouhard;

As requested, Gallaway Enterprises conducted protocol-level botanical surveys for Butte County meadowfoam (*Limnanthes floccosa* ssp. *californica*, BCM), Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*, CNPS Rank 1B.1), Ahart's paronychia (*Paronychia ahartii*, CNPS Rank 1B.1), Butte County golden clover (*Trifolium jokerstii*, CNPS Rank 1B.2), and Butte County checkerbloom (*Sidalcea robusta*, CNPS Rank 1B.2) within the Valley's Edge Project (Project) site on April 3, 4 and 5, and June 1, 2017. All of these plants are a California Native Plant Society (CNPS) Rank 1B¹ species and BCM is federally and state listed as endangered, therefore, the survey was conducted per California Department of Fish and Wildlife (DFW) guidelines as well as US Fish and Wildlife Service (USFWS) guidelines.

Location

The Project is located within USGS Chico Quadrangle, Section 28, 29, 32, and 33 of Township 22 N, Range 02 E, and Section 4, and 5 of Township 21 N, R 02 E. The Project site is located north of Honey Run Road, east of the Potter Road bike path, and south of Doe Mill Road/E. 20th Street at the base of the foothills of the Sierra Nevada mountain range (**Figure 1**). A utility corridor running west along Skyway Road from the southwest corner of the site is included as part of the Project boundary. The Doe Mill residential development occurs to the north of the Project. The foothills to the east of the Project are undeveloped open land. To the south of Honey Run Road is Butte Creek with low density housing developments and open undeveloped land. There is open land adjacent to the Project, west of the Potter Road bike path, containing vernal complexes, including the Doe Mill Preserve. The proposed Project is a community development comprised of mixed use residential, mixed use commercial, and open space. Currently, the Project site is used for cattle grazing, rock harvesting, and storing bee hive boxes. Within the site, the vegetation community is comprised of annual grassland, with shallow mima mound-swale topography, and blue oak (*Quercus douglasii*) and foothill pine (*Pinus sabiniana*) woodland. In general, the site is hilly with a few relatively flat areas along the western boundary of the site. Slopes vary from 0 to 70 percent across the site. The soil map units occurring within the Project site include soil map units known to support BCM populations (e.g. soil map unit 614). Soil depth across the site ranges from 0 to 48 inches, typically not deeper than 14 inches.

¹ According to the CNPS Inventory of Rare and Endangered Plants, 1B plants are species that are rare, threatened, or endangered in California and elsewhere.



1:24,000

0 1,000 2,000 Feet

Data Sources: ESRI, USGS,
Butte County

Valley's Edge Development Project
 Regional Location
 Figure 1

gallaway
ENTERPRISES

GE# 14-108 Map Date: 05/11/16

Methodology

The surveys for the 5 special-status plants species identified above were conducted on April 3, 4 and 5, and June 1, 2017, during the appropriate flowering window of the target species, by botanist Elena Gregg (see **Attachment A** for Botanist Qualifications) and assisted by biologists Matthew Clark and Vaughn Herold. All wetlands present were surveyed and meandering transects were conducted in the upland portions of the survey area on foot. A Trimble Geo Explorer 6000 Series GPS Receiver was on hand to record any special-status plant occurrences observed.

Surveys were conducted in accordance with the November 2009 DFW *Protocols for Surveying and Evaluation Impacts to Special Status Native Plant Populations and Natural Communities* and the September 1996 USFWS *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants*. Rainfall and inundation during the winter of 2016/2017 was considered above average by the National Oceanic and Atmospheric Administration (NOAA), and moisture in the soil had been sufficient to allow for germination of the four special-status plants based on visits to California Natural Diversity Database (CNDDDB) documented reference populations. A reference population of Ahart's paronychia at the Stone Ridge Ecological Reserve in Chico, CA was visited on March 17, 2017, a reference population of Butte County golden clover along Cottonwood Road in Butte County, CA was visited on March 21, 2017, a reference population of BCM at the Meriam Park Preserve in Chico, CA was visited on March 21, 2017, and a reference population of Butte County checkerbloom at Upper Bidwell Park was visited on May 29, 2017 to verify the blooming status of these species. During the reference site visits, all of these plants were observed in the flowering stage. An additional reference site visit to Meriam Park Preserve was conducted on April 1, 2017 to verify BCM was still observable. During this visit, it was identified that BCM was in the seeding stage and was still observable. Additionally, a voucher specimen of Red Bluff dwarf rush held at the Gallaway Enterprises office was reviewed prior to the field surveys.

Results

A total of 0.004 acre of BCM occurrences were observed in the survey area during the protocol-level survey conducted. These occurrences represent an approximate total of 30 individual plants. The locations of these occurrences are depicted in **Exhibit A**. Two additional CNPS Rank 4.3 plant species were observed within the Project site. These two plants included the shield-bracted monkeyflower (*Erythranthe glaucescens*) and Bidwell's knotweed (*Polygonum bidwelliae*). The shield-bracted monkeyflower was observed within all of the main drainages that flow east to west across the Project site. Bidwell's knotweed was observed within the annual grassland, specifically, throughout the shallow, rocky mima mound-swale portions of the site. As Rank 4.3 plant species, these two plants are considered to be on a watch list in California and should be avoided if at all possible by any future construction activities, however, there are no regulations in place that would require any compensation for the loss of these species. No additional special-status plant species were observed within the Project site. A list of all of the plant species observed during the survey is provided as **Attachment B**.

Should you have any questions, please do not hesitate to contact me at (530) 332-9909 or via email at elena@gallawayenterprises.com.

Sincerely,

A handwritten signature in black ink, appearing to read 'Elena Gregg', with a stylized, flowing script.

Elena Gregg, Senior Botanist
Gallaway Enterprises

Attachment A
Surveyor Qualifications

Elena Gregg, Senior Botanist / ISA Certified Arborist

EDUCATION

- **B.S., Environmental Biology and Management, 2004**
University of California, Davis

EXPERIENCE

12 Years

- **Gallaway Enterprises (2013-Current)**
Senior Botanist, ISA Certified Arborist
- **NorthStar Engineering (2009-2013)**
Senior Botanist, ISA Certified Arborist
- **Gallaway Consulting, Inc. (2006-2008)**
Botanist, ISA Certified Arborist
- **Jones and Stokes (2005)**
On-call Field Botanist
- **U.S. Forest Service, Truckee and Sierraville Ranger Districts (2004 and 2005)**
Botanical Technician

AREAS OF EXPERTISE

- Rare Plant Surveys
- Wetland Delineations
- Habitat Assessments
- Tree Inventories
- State and Federal permit Facilitation
- Endangered Species Act Documentation
- Mitigation Monitoring
- CRAM Assessments
- Arborist Construction Monitoring
- Habitat Restoration
- Environmental Awareness Training

Elena has over twelve years of professional experience conducting rare plant surveys, wetland delineations, and habitat assessments in California. She has a working knowledge of CNPS, CDFW, and USFWS survey protocols and holds a CDFW collection permit for listed plant species. Through her ample field experience in a wide array of habitats and eco-regions in Northern California, Mrs. Gregg has gained knowledge of locally invasive plants species as well as rare species. In particular, Mrs. Gregg has surveyed extensively for Butte County meadowfoam, a locally endangered plant species. Mrs. Gregg has a working knowledge of the Clean Water Act regulations and facilitation of local and federal environmental permits. She regularly prepares Caltrans documentation for projects receiving Caltrans Local Assistance. In 2007 Mrs. Gregg gained her Professional Arborist Certification from the International Society of Arboriculture. As a Certified Arborist, Mrs. Gregg conducts tree inventories, tree health assessments, and heritage tree surveys. She also prepares tree preservation plans and has been called upon to monitor trees during construction. Her experience with habitat restoration includes preparing wetland restoration plans, mitigation and monitoring plans, and reclamation plans. Mrs. Gregg also conducts annual monitoring associated with mitigation and re-vegetation projects, and in 2012 was trained in using CRAM to assess riverine and vernal pool systems.

Attachment B
Plant Species Observed

Plant Species Observed within the Valley's Edge Project April 3-5, May 10, & June 1, 2017

Scientific Name	Common Name
<i>Achyrrachaena mollis</i>	Blow-wives
<i>Acmispon brachycarpus</i>	Foothill lotus
<i>Aegilops triuncialis</i>	Barbed goatgrass
<i>Aesculus californica</i>	California buckeye
<i>Aira caryophyllea</i>	Silver hairgrass
<i>Allium amplexans</i>	Clasping onion
<i>Allium peninsulare</i> var. <i>peninsulare</i>	Mexican onion
<i>Alopecurus saccatus</i>	Vernal pool foxtail
<i>Amsinkia</i> sp.	Fiddleneck
<i>Aristolochia californica</i>	California pipevine
<i>Asclepias eriocarpa</i>	Indian milkweed
<i>Athysanus pusillus</i>	Common sandweed
<i>Avena barbata</i>	Wild oats
<i>Blenospermma nana</i>	Yellow carpet
<i>Brassica</i> sp.	Mustard
<i>Briza maxima</i>	Greater quaking-grass
<i>Briza minor</i>	Lesser quaking-grass
<i>Brodiaea elegans</i>	Harvest brodiaea
<i>Bromus diandrus</i>	Rip-gut brome
<i>Bromus hordeaceus</i>	Soft chess
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Red brome
<i>Callitriche heterophylla</i>	Water starwort
<i>Calystegia occidentalis</i> ssp. <i>occidentalis</i>	Western morning glory
<i>Cardamine oligosperma</i>	Western bittercress
<i>Carduus pycnocephalus</i>	Italian thistle
<i>Castilleja attenuata</i>	Valley tassels
<i>Ceanothus cuneatus</i> var. <i>cuneatus</i>	Buck brush
<i>Ceanothus integerrimus</i>	Deer brush
<i>Centaurea solstitialis</i>	Yellow star thistle
<i>Centromadia fitchii</i>	Fitch's spikeweed
<i>Cerastium glomeratum</i>	Mouse-eared chickweed
<i>Cercis occidentalis</i>	Western redbud
<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	Wavyleaf soap-plant
<i>Cicendia quadrangularis</i>	Timwort
<i>Clarkia arcuata</i>	Glandular clarkia
<i>Clarkia purpurea</i>	Winecup clarkia
<i>Claytonia perfoliata</i>	Miner's lettuce
<i>Clematis lasiantha</i>	Chaparral clematis
<i>Convolvulus arvensis</i>	Bindweed
<i>Crassula aquatica</i>	Aquatic pygmyweed
<i>Crassula connatum</i>	Pygmyweed
<i>Crassula tillaea</i>	Moss pygmyweed
<i>Croton setiger</i>	Turkey-mullein
<i>Crucianella angustifolia</i>	Crosswort

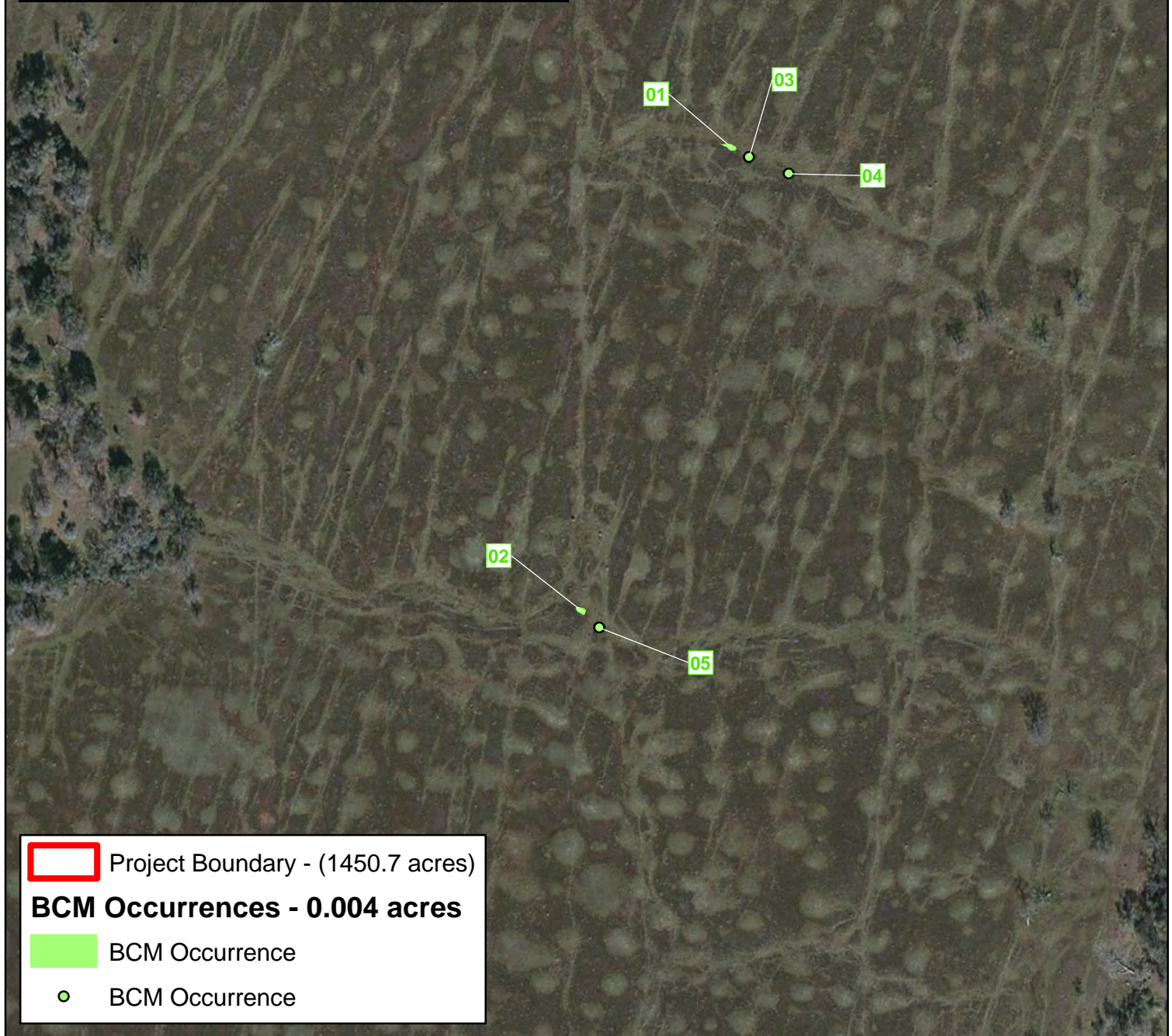
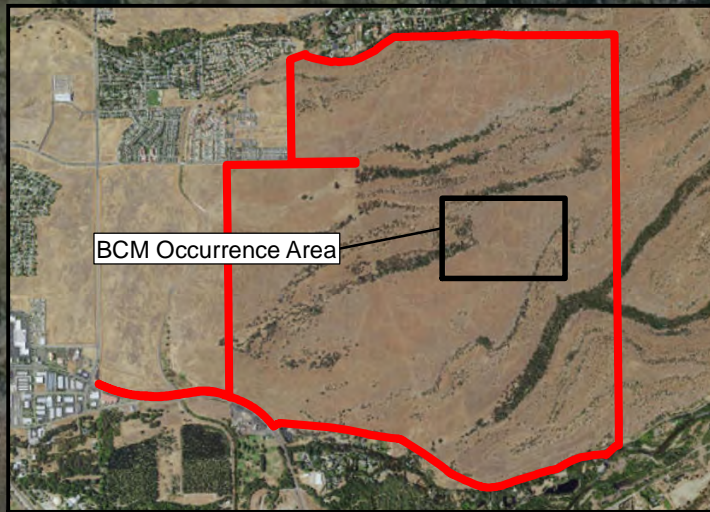
Scientific Name	Common Name
<i>Cynodon dactylon</i>	Bermuda grass
<i>Cynosurus echinatus</i>	Hedgehog dogtail
<i>Cyperus eragrostis</i>	Tall nutsedge
<i>Daucus pusillus</i>	Rattlesnake weed
<i>Delphinium variegatum</i> ssp. <i>variegatum</i>	Royal larkspur
<i>Deschampsia danthonoides</i>	Annual hairgrass
<i>Dichelostemma capitatum</i>	Blue dicks
<i>Dichelostemma multiflorum</i>	Round-toothed ookow
<i>Dichelostemma volubile</i>	Twining ookow
<i>Eleocharis macrostachya</i>	Pale spike-rush
<i>Elymus caput-medusae</i>	Medusahead
<i>Epilobium densiflorum</i>	Dense flowered spike primrose
<i>Epilobium torreyi</i>	Torrey's willowherb
<i>Eriogonum nudum</i> var. <i>pubiflorum</i>	Naked buckwheat
<i>Erodium botrys</i>	Long-beaked stork's-bill
<i>Erodium cicutarium</i>	Cut-leaf filaree
<i>Eryngium castrense</i>	Coyote thistle
<i>Erythranthe glaucescens</i>	Shield-bracted monkeyflower
<i>Eschscholzia lobbiai</i>	Fryingpans
<i>Festuca bromoides</i>	Six-weeks fescue
<i>Festuca myuros</i>	Rattail fescue
<i>Festuca perennis</i>	Rye-grass
<i>Ficus carica</i>	Wild fig
<i>Frangula californica</i>	California coffeeberry
<i>Galium aparine</i>	Bedstraw
<i>Galium parisiense</i>	Wall bedstraw
<i>Gastridium phleoides</i>	Nitgrass
<i>Geranium dissectum</i>	Cut-leaved geranium
<i>Geranium molle</i>	Dove's-foot geranium
<i>Gilia tricolor</i>	Bird's eye gilia
<i>Gnaphalium palustre</i>	Western marsh cudweed
<i>Gratiola ebracteata</i>	Common hedge hyssop
<i>Grindelia hirsutula</i> var. <i>davyi</i>	Foothill gumplant
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley
<i>Hordeum murinum</i>	Wall hare barley
<i>Hypochaeris glabra</i>	Smooth cat's ear
<i>Juglans hindsii</i>	Black walnut
<i>Juncus bufonius</i>	Toadrush
<i>Juncus capitatus</i>	Leafy bracted dwarf rush
<i>Koeleria gerardii</i>	Annual junegrass
<i>Lactuca serriola</i>	Prickly lettuce
<i>Lamium amplexicaule</i>	Giraffehead
<i>Lasthenia californica</i>	California goldfields
<i>Lasthenia fremontia</i>	Goldfields
<i>Layia fremontii</i>	Tidy-tips




Scientific Name	Common Name
<i>Leontodon saxatilis</i>	Hawkbit
<i>Lepechinia calycina</i>	California pitcher-sage
<i>Lepidium nitidum</i>	Shinning pepperweed
<i>Leptosiphon bicolor</i>	True babystars
<i>Lessingia nemaclada</i>	Slender-stemmed lessingia
<i>Limnanthes douglasii</i> ssp. <i>rosea</i>	Rosy meadowfoam
<i>Limnanthes floccosa</i> ssp. <i>californica</i>	Butte County meadowfoam
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i>	Wooly meadowfoam
<i>Lithophragma bolanderi</i>	Bolander's woodlandstar
<i>Logfia gallica</i>	Narrowleaf cottonrose
<i>Lonicera interrupta</i>	Chaparral honeysuckle
<i>Lupinus nanus</i>	Sky lupine
<i>Lysimachia arvensis</i>	Scarlet pimpernel
<i>Lythrum hyssopifolia</i>	Hyssop loosestrife
<i>Madia elegans</i>	Common madia
<i>Marah fabacea</i>	California manroot
<i>Matricaria discoidea</i>	Common pineapple weed
<i>Medicago polymorpha</i>	Common bur-clover
<i>Micropus californicus</i> var. <i>californicus</i>	Q tips
<i>Microseris acuminata</i>	Sierra foothill silverpuff
<i>Mimulus guttatus</i>	Seep monkeyflower
<i>Minuartia californica</i>	Sandwort
<i>Montia fontana</i>	Water montia
<i>Navarretia filicaulis</i>	Thread-stem navarretia
<i>Navarretia intertexta</i> ssp. <i>intertexta</i>	Needle-leaved navarretia
<i>Navarretia leucocephala</i>	White pin-cushion
<i>Navarretia pubescens</i>	Downy navarretia
<i>Navarretia tagetina</i>	Marigold navarretia
<i>Nemophila pedunculata</i>	Meadow nemophila
<i>Odontostomum hartwegii</i>	Hartweg's odontostomum
<i>Olea europaea</i>	Olive
<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>	Gold-backed fern
<i>Perideridia oregana</i>	Oregon yampah
<i>Petrorhgia dubia</i>	Grass-pink
<i>Pilularia americana</i>	American pillwort
<i>Pinus sabiniana</i>	Gray pine
<i>Plagiobothrys austini</i>	Austin's popcorn flower
<i>Plagiobothrys fulvus</i>	Common popcorn flower
<i>Plagiobothrys stipitatus</i> var. <i>micranthus</i>	Small-flowered popcornflower
<i>Plagiobothrys stipitatus</i> var. <i>stipitatus</i>	Large-flowered popcornflower
<i>Plantago coronopus</i>	Cut-leaf plantain
<i>Plantago elongata</i>	Prairie plantain
<i>Plantago erecta</i>	Erect plantain
<i>Plantago lanceolata</i>	English plantain
<i>Plectritis ciliosa</i>	Pink plectritis

Scientific Name	Common Name
<i>Poa annua</i>	Annual bluegrass
<i>Poa bulbosa</i>	Bulbous bluegrass
<i>Poa secunda</i>	Bluegrass
<i>Pogogyne zizyphoroides</i>	Sacramento Valley pogogyne
<i>Polygonum bidwelliae</i>	Bidwell's knotweed
<i>Polypogon monspeliensis</i>	Rabbitsfoot grass
<i>Primula clevelandii</i> ssp. <i>patula</i>	Lowland shootingstar
<i>Prunus dulcis</i>	Almond
<i>Psilocarphus brevissimus</i>	Woolly marbles
<i>Quercus douglasii</i>	Blue oak
<i>Quercus lobata</i>	Valley oak
<i>Quercus wislizeni</i>	Live oak
<i>Ranunculus aquatilis</i> var. <i>aquatilis</i>	Broad-leaved water buttercup
<i>Ranunculus muricatus</i>	Prickle-seeded buttercup
<i>Rhus aromatica</i>	Fragrant sumac
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rumex crispus</i>	Curly dock
<i>Salix laevigata</i>	Red willow
<i>Salix lasiolepis</i>	Arroyo willow
<i>Sambucus nigra</i> ssp. <i>caerulea</i>	Blue elderberry
<i>Sedella pumila</i>	Dwarf-stonecrop
<i>Selaginella hansenii</i>	Hansen's spikemoss
<i>Senecio vulgaris</i>	Old-man-in-the-Spring
<i>Sherardia arvensis</i>	Field-madder
<i>Sidalcea calycosa</i> ssp. <i>calycosa</i>	Annual checkerbloom
<i>Sidalcea hartwegii</i>	Hartweg's checkerbloom
<i>Silene gallica</i>	Common catchfly
<i>Silybum marianum</i>	Milk thistle
<i>Solanum parishii</i>	Parish's nightshade
<i>Stachys rigida</i>	Rigid hedge nettle
<i>Stellaria media</i>	Common chickweed
<i>Torilis arvensis</i>	Hedge parsley
<i>Toxicodendron diversilobum</i>	Poison oak
<i>Tragopogon dubius</i>	Yellow salsify
<i>Trifolium depauperatum</i>	Cowbag clover
<i>Trifolium dubium</i>	Shamrock clover
<i>Trifolium glomeratum</i>	Sessile-headed clover
<i>Trifolium hirtum</i>	Rose clover
<i>Trifolium microcephalum</i>	Maiden clover
<i>Trifolium repens</i>	White clover
<i>Trifolium subterraneum</i>	Sub clover
<i>Trifolium variegatum</i>	White-tipped clover
<i>Trifolium willdenovii</i>	Wildcat clover
<i>Triteleia hyacinthina</i>	Wild hyacinth
<i>Triteleia laxa</i>	Ithuriel's spear

Scientific Name	Common Name
<i>Triteleia lilacina</i>	Foothill triteleia
<i>Tryphisaria ericaria</i>	Johnnytuck
<i>Umbellularia californica</i>	California bay laurel
<i>Velezia rigida</i>	Velezia
<i>Verbascum blattaria</i>	Moth mullein
<i>Veronica peregrina</i> ssp. <i>xalapensis</i>	Purslane speedwell
<i>Vicia sativa</i>	Garden vetch
<i>Vicia villosa</i>	Winter vetch
<i>Vitis californica</i>	Wild grape
<i>Xanthium strumarium</i>	Rough cocklebur
<i>Zeltnera venusta</i>	June centaury

Exhibit A
Butte County Meadowfoam Occurrence Maps



-  Project Boundary - (1450.7 acres)
- BCM Occurrences - 0.004 acres**
-  BCM Occurrence
-  BCM Occurrence



1:2,200
0 100 200 Feet
Data Sources: ESRI,
Butte County

Valley's Edge Development Project
BCM Occurrence Map

Surveyed by: E.G.,
April 4, 2017
GE# 14-108

gallaway
ENTERPRISES
Map Date: 04/20/17

Appendix D

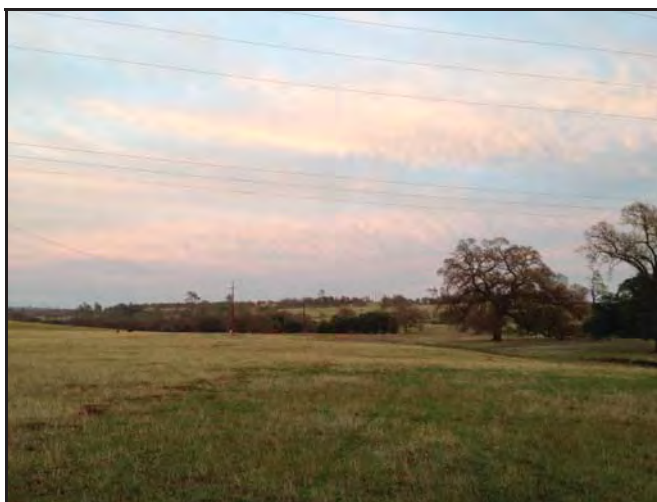
Wet-Season and Dry-Season Invertebrate Sampling Reports

2014-2015 WET SEASON BRANCHIOPOD SURVEY

For the
VALLEY'S EDGE PROJECT

90-Day Findings Report
USFWS Reference # 2015-TA-0035

May 2015



Prepared for:
U.S. Fish and Wildlife Service, Sacramento Office
Attn: David Lee Kelly
2800 Cottage Way W-2605
Sacramento, CA 95825-1888

Prepared by:
Gallaway Enterprises
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Chico CA 95928
(530) 332-9909
www.gallawayenterprises.com

2014-2015 WET SEASON BRANCHIOPOD SURVEY

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MAY 2015

SUMMARY OF FINDINGS

Gallaway Enterprises performed a first wet-season vernal pool branchiopod survey for the Valley's Edge Project site in Chico, Butte County, California, in accordance with the U.S. Fish and Wildlife Service's *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods*. Surveys were initiated on November 25, 2014, and continued until February 25, 2015 within wetland features that met the minimum requirements for vernal pool branchiopods. The site continued to be monitored for ponded water after rain events until April 27, 2015; however the rain events that occurred during this period were not significant enough to result in 3 cm or more of ponded water or the reinitiating of sampling. All wetland features, including vernal pools, vernal swales, and seasonal wetlands within the portions of the Project site proposed for development were observed to determine if they met the minimum requirements for vernal pool branchiopods. Of the wetland features identified in these portions of the site, 31 supported the necessary parameters to support branchiopod life and were sampled in efforts to determine the presence/absence of federally listed vernal pool branchiopods in each wetland feature. The surveys were conducted due to the high potential for occurrence of federally listed vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardii*) within the site. During the 2014-2015 wet-season surveys no federally listed branchiopods were observed within the wetlands.

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APPENDICES AND EXHIBITS

Appendix A – USFWS Wet-Season Sampling Authorization

Appendix B – USFWS Vernal Pool Data Sheets

Appendix C – Survey Location Photographs

Exhibit A – Wet Season Sampling Location Map

1.0 INTRODUCTION

The Valley's Edge Project (also referred to as the Doe Mill/Honey Run Special Planning Area in the City of Chico's General Plan) site is located within USGS Chico Quadrangle, Section 28, 29, 32, and 33 of Township 22 N, Range 02 E, and Section 4, and 5 of Township 21 N, R 02 E. The Project site includes Assessor's Parcel Numbers 018-390-005, 018-390-007, 017-210-005, 017-260-119, 017-210-006, & 017-240-023. The Project site is located north of Honey Run Road, east of Potter Road, and south of Doe Mill Road at the base of the foothills of the Sierra Nevada mountain range (**Figure 1**). The Doe Mill residential development occurs to the north of the Project. The foothills to the east of the Project are undeveloped open land. To the south of Honey Run Road is Butte Creek with low density housing developments and open undeveloped land. There is open land adjacent to the Project, west of Potter Road, containing vernal complexes.

1.1 Purpose of the Survey

A protocol-level wet-season survey for the portions of the site proposed for development was conducted to establish feature by feature presence or absence of listed vernal pool branchiopods. A complete survey per U.S. Fish and Wildlife Service (USFWS) guidelines consists of either two full wet-season surveys, done within a 5-year period, or two consecutive seasons consisting of one full wet-season survey, and one dry-season survey (or one dry-season survey and one full wet-season survey).

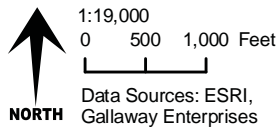
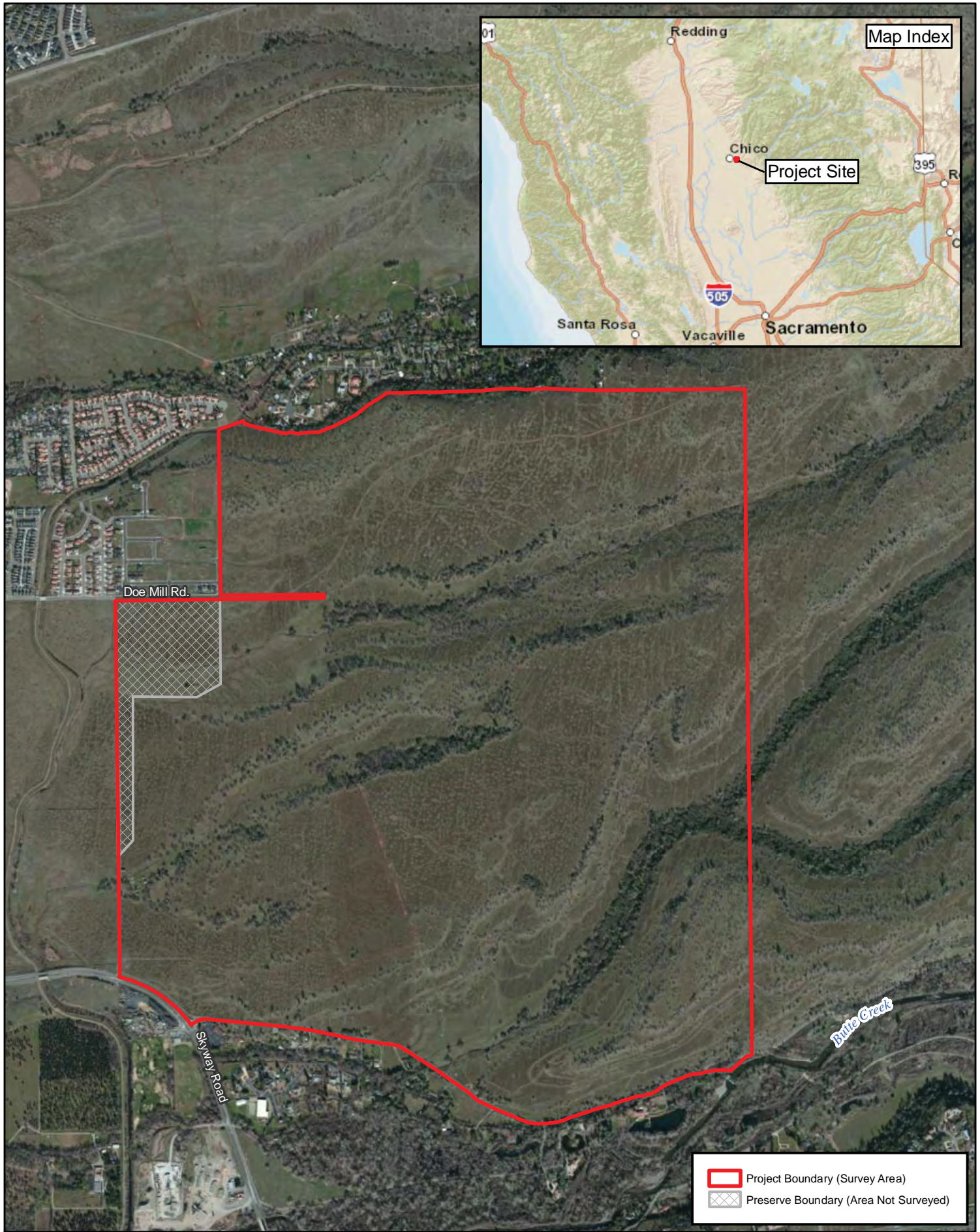
Written authorization from the USFWS to conduct the surveys for Valley's Edge was received November 06, 2014 via e-mail from David Kelly (USFWS Reference No. 2015-TA-0035, **Appendix A**).

For the purpose of this report, the term branchiopod refers strictly to the 2 federally listed vernal pool invertebrate species that have the potential to occur within the site: vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardii*).

The following wet-season report is being submitted in accordance with the conditions of the USFWS Permit TE-049693-1. This document follows the reporting format outlined in the USFWS 1996 *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods* (USFWS Guidelines).

2.0 PROJECT DESCRIPTION

The proposed Project includes the construction of a recreation oriented, mixed-use development offering a broad range of housing types and densities. The currently proposed development will include a village core, that would provide a mix of professional offices,



Valley's Edge Development Project
Location Map
Figure 1

neighborhood retail, and other services, retail along Skyway Road, a variety of residential densities (including very low, low, medium, and medium-high density), open space areas, a community park, neighborhood and pocket parks, public uses (potentially an elementary school site), and preserve areas with creekside corridors. Roadways, trails, and bikeways will be integrated into the natural landscape to connect the residential areas to parks, open space, offices, public facilities, and services.

3.0 METHODOLOGY

3.1 Survey Methodology

Surveys were conducted according to the USFWS Guidelines. Upon receipt of USFWS approval to survey the site (**Appendix A**), surveys were initiated after the first seasonal storm event to determine when pools/swales were inundated over 3 cm. The sampling period began November 25, 2014, with the last sample date on February 25, 2015. From this last sample date until April 27, 2015 the site was continued to be surveyed for ponding water after rain events; however, none of the rain events during this time period resulted in ponded water within the wetlands sufficient for sampling to be reinitiated. Once inundated, pools and swales were sampled every two weeks unless no longer inundated. The Project site contained varying sizes of wetland features, some of which remained inundated or re-filled multiple times to allow them to be sampled more than once during the survey period and others that did not pond water over 3 cm. Pools were evaluated during each site visit and sampled if they contained greater than 3 cm of water. At each site visit, the survey area was traversed by quad. Sampling was done with a 0.5-mm mesh, long-handled D-net. A representative sample of each pool/swale's micro-habitats, including the bottom, edges and vertical water column was collected; and netted contents were examined either within the bag of the net, or transferred to a bucket and examined by portions in a white or clear sorting pan.

Biologists Jody Gallaway (TE-049693) and Elena Gregg (TE-049693) performed the field surveys and were aided by biologist Melissa Murphy.

4.0 HABITAT DESCRIPTION

4.1 Environmental Setting

The site is currently used for cattle grazing, rock harvesting, and storing bee hives. Within the site the vegetation community is comprised of annual grassland with palustrine habitat, including vernal and seasonal features, and blue oak (*Quercus douglasii*) and foothill pine (*Pinus sabiniana*) woodland.

The average annual precipitation is 25.66 inches and the average annual temperature is 61° F (WRCC). The region, as has much of California, has experienced several years of drought. The topography of the site is largely sloped with a western aspect. The elevation at the Project ranges from 230-520 feet above sea level. Much of the Project site is comprised of rocky mound-swale topography that suggests the presence of wetland signatures when viewing the aerial photography; however, these areas often have too steep a gradient and thin eroded soil that is unable to support hydrophytic vegetation and hydric soils. Soil depth across the site ranges from 0 to 48 inches, typically not deeper than 14 inches. Numerous vernal pools and swales are present along the western edge of the survey area; many of these pools were created when the construction of Potter Road, which travels north and south along the western edge of the survey area, created an impediment. This impediment causes water to pool for longer durations. A broad finger ridge extends through the center of the property with two creek valleys to the north and south of the ridge. South of the ridge, Comanche Creek enters the west side of the property, flows southwest, and exits the south side of the property, and north of the ridge, an unnamed drainage flows east to west across the site. One unnamed ephemeral drainage originates in the center of the property, flows west, and exits the west side of the Project boundary. All of the drainages flow west off the Project site and enter sloughs or diversion channels that flow in a southwest direction, where they have a direct connection with the Sacramento River.

4.2 Determination of Branchiopod Habitat

The Project site's wetland features were delineated in 2014. A map depicting the delineated wetland features and corresponding numbers was referenced during each site visit to determine the features that ponded water for sufficient amounts of time to support branchiopods (**Exhibit A**). Two additional areas ponded water for sufficient amounts of time to support branchiopods but were not considered to meet the criteria required to be mapped as a potential jurisdictional wetland. The areas are depicted on **Exhibit A** as sample points. All ponded features with the potential of supporting the life cycle of any of the listed vernal pool branchiopods were located on the wetland delineation map, sampled and recorded on Data Sheets (**Appendix B**). Pictures of the survey area are provided in **Appendix C**.

4.3 Vernal Pools and Swales

Within the Project site, all features were checked for ponded water 3cm deep or deeper; however, only 31 features ponded water at the minimum depth long enough during the 2014-2015 wet-season to be sampled (**Exhibit A**). Of the 31 features sampled, only 11 of them were sampled more than once during the 2014-2015 wet-season. Vernal pools and swales within the site were quite similar, and in many cases seemed identical upon weekly evaluation in the field. The majority of the vernal features present within the site are shallow, occur on a slight slope, and are positioned on thin soils. As such, any ponded water within these features tended to evaporate quickly, resulting in a lack of sufficient parameters to provide suitable branchiopod habitat. These features included vernal features within the site that were either only sampled

once or not at all during the 2014-2015 wet-season. Of features sampled more than once, 3 were deep pot holes (two were natural located in bedrock and one was man-made) and the remaining 8 all had similar characteristics that resulted in a longer ponding duration. The characteristics these features had in common included having a relatively larger size, being relatively deeper, located on much flatter terrain and/or having a slight impediment associated with it, and being positioned in areas where the soil was deeper.

5.0 SURVEY RESULTS

5.1 Results

Wet-season surveys conducted within the Project site resulted in negative findings for federally listed branchiopods. Data sheets can be found in **Appendix B**.

5.1.1 Sampling Locations

All the wetland features supporting the parameters to potentially sustain the life cycle of vernal pool branchiopods within the Valley's Edge Project site are depicted in **Exhibit A**.

5.1.2 Species Identified and Population Size

No federally listed branchiopods were observed in the wetlands surveyed within the Project site. General species encountered in pool communities on the site included *Hypogastrura* sp., copepods, ostracods, planarians, baetidae larvae, notonectids, hydrophilid adults and larvae, gastropods, corixids, dytiscid adults and larvae, *Trombidium* sp., hydrachnids, and several types of dipteran larvae.

6.0 SUMMARY

Precipitation events during the 2014-2015 wet-season occurred primarily in the months of November and February. Very little precipitation occurred in between these months, allowing wetlands to dry in between rain events. Of the wetlands present within the Project site, only a few vernal pools remained inundated for a long enough period of time for them to be sampled and even fewer remained inundated for a long enough duration to be sampled more than once. Although the 2014-2015 wet-season was a continuation of a multi-year drought, the thin soils, slopes present, and small size of the majority of the features on the site indicate that the features may normally pond for only a short duration, and, thus, provide only marginal habitat for federally listed invertebrates.

During the sampling efforts, a variety of common freshwater invertebrates were observed in the features sampled. However, no federally listed invertebrates were present.

11.0 REFERENCES CONSULTED

Eriksen, C.H. and D. Belk. 1999. Fairy shrimps of California's puddles, pools, and playas. Mad River Press, Eureka, CA.

Merritt, R.W., and K.W. Cummins (eds.). 1996. An introduction to the aquatic insects of North America (3rd ed.). Kendall/Hunt Publishers, Dubuque, IA.

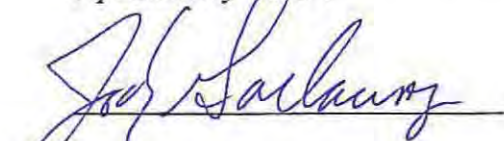
Smith, D.G. 2001. Pennak's freshwater invertebrates of the United States: porifera to crustacea. 4th Edition. John Wiley and Sons, Inc., New York, NY.

Thorp, J.H. and A.P. Covich (eds). 2001. Ecology and classification of North American freshwater invertebrates (2nd ed.). Academic Press. San Diego, CA.

USFWS. 1996. Interim survey guidelines to permittees for recovery permits under Section 10(a)(1)(A) of the Endangered Species Act for the listed vernal pool branchiopods. USFWS Sacramento Field Office, Sacramento, CA.

12.0 STATEMENT OF SURVEYORS

"I certify that the information in this survey report and attached exhibits fully and accurately represent my work".

 Jody Gallaway (#TE-049693)

 Elena Gregg (#TE-049693)

APPENDIX A

USFWS Wet-Season Sampling Authorization

Elena Gregg

From: Jody Gallaway
Sent: Thursday, November 06, 2014 9:19 AM
To: Elena Gregg
Cc: Bill Brouhard (bill@gbrealestate.net)
Subject: FW: Valleys Edge Survey Request

fyi

From: Kelly, David [mailto:david_kelly@fws.gov]
Sent: Thursday, November 06, 2014 9:13 AM
To: Jody Gallaway
Cc: Kellie Berry; Mike Thomas; Richard Kuyper
Subject: Re: Valleys Edge Survey Request

Jody Gallaway,

By this email message you are authorized to conduct wet season surveys (2014-2015) for federally-listed vernal pool branchiopods, per the conditions of your recovery permit TE-049693 and as specified in your letter requests with maps dated in November 4, 2014. The surveys will be conducted at the following project sites:

1. 1,450 acre Valley's Edge project site east of the City of Chico, Butte County (Service Ref Number 2015 - TA - 0035)

This site is described in the request letters and attached maps. Your request is to sample seasonally inundated wetlands, pools, ditches, and basins located within the sites. Surveys may be conducted within all seasonally inundated wetlands identified on-site that may provide suitable vernal pool crustacean habitat. Suitable habitat not previously identified on the project site may also be sampled under this authorization.

Please remember to carry a copy of your permit while doing the work, and to follow the terms and conditions of the permit and the survey guidelines, including the reporting requirements. In your report, please include which surveys were authorized, the names of all persons involved in the surveys, their recovery permit numbers, if applicable, and the date of this authorization, to help ensure that we correctly record the fulfillment of the reporting requirement under this authorization. Please let us know if the surveys are not performed as authorized, or if they are done by a different permittee under a separate authorization. This authorization does not include access to the property which must be arranged with the landowner or manager.

Please send one hard copy and one electronic copy of the report(s) to David Kelly, of our Recovery Branch, and send a separate copy (electronic) to Kellie Berry, Chief of the Sacramento Valley Division. We ask that you use UTM coordinates for all spatial data and that you use the reference

number provided with the site descriptions above in any future correspondence regarding the survey.

To ensure the accuracy and data integrity of your project, it is requested that you provide spatial information (boundaries, study areas, parcels, point locations, etc.) in the form of an ESRI shape file with projection, a GPS file with projection, or locations in an Excel spreadsheet with projection information. The preferred projection is UTM, Zone 10S, NAD83; the Sacramento Fish and Wildlife Office (SFWO) standard. FGDC compliant metadata must accompany each file. Please include any USFWS File Numbers associated with the data in your documentation. For additional information regarding metadata standards refer to <http://www.fgdc.gov>. For more information regarding spatial data please contact: Cheryl L. Hickam, GIS Branch Chief, U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W-2605, Sacramento, Ca 95825-1846, office: 916-414-6708.

On Wed, Nov 5, 2014 at 2:32 PM, Jody Gallaway <jody@gallawayenterprises.com> wrote:

David;

The attached is a request to conduct protocol level invertebrate studies at the proposed Valley Edge project site, Chico, Butte County. Please contact me if you should have any questions.

Thanks,

Jody Gallaway

President and Senior Biologist

Gallaway Enterprises, Inc.

117 Meyers Street, Suite 120

Chico, CA 95928

(530) 332-9909 office

(530) 332-9905 fax

www.gallawayenterprises.com

A DBE certified business dedicated to exceptional client services.

--

David Lee Kelly
Recovery Biologist
Sacramento Fish and Wildlife Office
2800 Cottage Way W-2605
Sacramento, California 95825-1888
Phone:916-414-6492

APPENDIX B

USFWS Vernal Pool Data Sheets

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

New Sample Point 1

This form is being submitted to serve as part of the 90-day report: ☐ no ☒ yes

Required color slides and/or photographs for the project site are included: ☐ no ☐ yes

Date: 11/25/14 Time: 12:25 County: Butte Quad: Chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: valley's Edge Pool #: Sample Point 1

Township: 22 N Range: 2 E Section: 32 39.716405° lat. -121.768453° long.

Temperature: Water: 16 °C Air: 20 °C

Pool Depth:

at time of sampling: 8 cm

estimated maximum: 20 cm

Surface Area:

at time of sampling: 1 m x 2 m

estimated maximum: 1 m x 2 m

rock

Habitat Condition: (circle where appropriate)

- undisturbed

disturbed: tire tracks garbage discing/plowing

- ungrazed

grazed:

cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l

Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm

Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm

Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans: yes no
 Conchostracans: yes no
 Copepods: yes no
 Ostracods yes no
 Fish yes no
 Frogs yes no
 Salamanders yes no
 Waterfowl yes no

Insects: (adult or larvae)

Anisoptera: yes no
 Zygoptera: yes no
 Hydrophilidae: yes no
 Dytiscidae: yes no ? sp.
 Corixidae: yes no
 Notonectidae: yes no
 Belostomatidae: yes no

Other (specify) _____

Other (specify) _____

flatworms (planaria)

Hypogastrea sp. (springtail)
small flies

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 11/25/14 Time: 11:52 County: Butte Quad: chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 74

Township: 22N Range: 2E Section: 32 39.714272 lat. -121.777740 long.

Temperature: Water: 17 °C Air: 20 °C

Pool Depth: at time of sampling: 6 cm Surface Area: at time of sampling: 3 m x 2.5 m

estimated maximum: 10 cm estimated maximum: 6 m x 4 m

Habitat Condition: (circle where appropriate)

- undisturbed

disturbed: tire tracks garbage discing/plowing

- ungrazed

grazed:

cattle
light

horses sheep other _____
moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Notostracans:
(note reproductive status)

Species Observations (Optional) : *None*

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) _____

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species

Individuals

Accession/Catalog #

Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no X yes

Required color slides and/or photographs for the project site are included: ___ no ___ yes

Date: 11/25/14 Time: 11:26 am County: Butte Quad: Chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 73

Township: 22N Range: 2E Section: 32 39.714023° lat. -121.777733° long.

Temperature: Water: 14 °C Air: 19 °C

Pool Depth: at time of sampling: 11 cm Surface Area: at time of sampling: 3 m x 12 m

estimated maximum: 18 cm estimated maximum: 8 m x 24 m

Habitat Condition: (circle where appropriate)

- undisturbed

disturbed: tire tracks garbage discing/plowing

- ungrazed

grazed:

cattle
light

horses sheep other _____
moderate heavy

- land use of habitat: open grazing land

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l

Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm

Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm

Total Dissolved Solids (TDS): _____ ppm

Notes:

Partial
2x1 m
area Part of
WF 73 discolor
5cm deep
nothing in it.

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: None
 (note reproductive status)

Notostracans: None
 (note reproductive status)

Species Observations (Optional) :

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) Gastropoda / snails
water mites

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species

Individuals

Accession/Catalog #

Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Sample #12

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no x yes

Required color slides and/or photographs for the project site are included: ___ no ___ yes

Date: 12, 9, 14 Time: 1242 County: Butte Quad: Chico

Collector(s): Elena Gregg, Melissa Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 93

Township: 22N Range: 2E Section: 32 39.714583 lat. -121.776885 long.

Temperature: Water: 17 °C Air: 16 °C

Pool Depth: at time of sampling: 20 cm Surface Area: at time of sampling: 2 m x 14 m

estimated maximum: 25 cm estimated maximum: 3 m x 14 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) Platyhelminths

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Eggs? 4-5
 Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/9/14 Time: 1:10 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF68

Township: 22N Range: 2E Section: 32 39.714583 lat. -121.776805 long.

Temperature: Water: 18 °C Air: 16 °C

Pool Depth:

at time of sampling: 7 cm

estimated maximum: 15 cm

Surface Area:

at time of sampling: 4 x 9 m x 7 m

estimated maximum: 8 m x 17 m

*2 separate
pools w/ 14
feet time*

Habitat Condition: (circle where appropriate)

- undisturbed

disturbed: tire tracks garbage discing/plowing

- ungrazed

grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l

Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm

Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm

Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____
 planaria

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	<u>yes</u>	no
Corixidae:	<u>yes</u>	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____
 2 larvae

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
----------------	----------------------	----------------------------	---------------

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no X yes

Required color slides and/or photographs for the project site are included: ___ no ___ yes

Date: 12/9/14 Time: 1:30 County: Butte Quad: chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-649693

Site/Project Name: Valley's Edge Pool #: WF 66

Township: 22 N Range: 2 E Section: 32 39.714583 lat. -121.776805 long.

Temperature: Water: 18 °C Air: 15 °C

Pool Depth: at time of sampling: 6 cm Surface Area: at time of sampling: 5 m x 3 m

estimated maximum: 10 cm estimated maximum: 6 m x 4 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle light horses sheep other moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): ___ ppm or mg/l Conductivity: ___ uMHO

Dissolved NH₄: ___ ppt or ppm Dissolved Oxygen: ___ ppm or mg/l

pH: ___ Turbidity: (secchi disc depth) ___ cm or: clear to bottom ___

Salinity: ___ ppt or ppm Total Dissolved Solids (TDS): ___ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans: yes no
 Conchostracans: yes no
 Copepods: yes no
 Ostracods yes no
 Fish yes no
 Frogs yes no
 Salamanders yes no
 Waterfowl yes no

Other (specify) _____
 Planaria

Insects: (adult or larvae)

Anisoptera: yes no
 Zygoptera: yes no
 Hydrophilidae: yes no
 Dytiscidae: yes no
 Corixidae: yes no
 Notonectidae: yes no
 Belostomatidae: yes no

Other (specify) _____
 ? 10/14/16

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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1

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	_____	

planaria

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

larva

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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1

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) _____

Planaria

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	<u>yes</u>	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) Dytiscid larva - Agabus

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species

Individuals

Accession/Catalog #

Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ☐ no ☒ yes

Required color slides and/or photographs for the project site are included: no yes

Date: 12/9/14 Time: 2:00 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF69

Township: 22N Range: 2E Section: 32 39.714583 lat. -121.776805 long.

Temperature: Water: 17 °C Air: 16 °C

Pool Depth: _____ Surface Area: _____
at time of sampling: 5 cm at time of sampling: 4 m x 6 m

estimated maximum: 8 cm estimated maximum: 5 m x 8 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
 light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): ppm or mg/l Conductivity: uMHO

Dissolved NH₄: ppt or ppm Dissolved Oxygen: ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom

Salinity : ppt or ppm Total Dissolved Solids (TDS): ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) Planaria

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/9/14 Time: 2:10 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 76

Township: 22 N Range: 2 E Section: 32 39.714583° lat. -121.776805° long.

Temperature: Water: 18 °C Air: 17 °C

Pool Depth: _____
at time of sampling: 5 cm

Surface Area: _____
at time of sampling: 20 m x 5 m

estimated maximum: 10 cm estimated maximum: 20 m x 7 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage disking/plowing

- ungrazed grazed: cattle horses sheep other _____
 light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): ppm or mg/l Conductivity: uMHO

Dissolved NH_4 : ppt or ppm Dissolved Oxygen: ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity : _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods (yes) no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) Spider mites
 Planaria

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/9/14 Time: 2:20 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: 41F70

Township: 22N Range: 2E Section: 32 39.714075 lat. -121.776647 long.

Temperature: Water: 18 °C Air: 17 °C

Pool Depth: at time of sampling: 7 cm Surface Area: at time of sampling: 10 m x 5 m

estimated maximum: 15 cm estimated maximum: 11 m x 5 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>planaria</u>	

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	<u>yes</u>	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Saturnia wrighti

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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1

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>Planaria</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

New #3

This form is being submitted to serve as part of the 90-day report: ___ no ☒ yes

Required color slides and/or photographs for the project site are included: ___ no ___ yes

Date: 12/9/14 Time: 2:35 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: Sample Point 2

Township: 22N Range: 2E Section: 32 39.714080 lat. -121.777435 long.

Temperature: Water: 17 °C Air: 18 °C

Pool Depth: at time of sampling: 7 cm Surface Area: at time of sampling: 10 m x 3 m

estimated maximum: 10 cm estimated maximum: 10 m x 4 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle light horses sheep other moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): ___ ppm or mg/l Conductivity: ___ uMHO

Dissolved NH₄: ___ ppt or ppm Dissolved Oxygen: ___ ppm or mg/l

pH: ___ Turbidity: (secchi disc depth) ___ cm or: clear to bottom ___

Salinity: ___ ppt or ppm Total Dissolved Solids (TDS): ___ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Notostracans:
(note reproductive status)

Species Observations (Optional) : None

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify) _____		

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/9/14 Time: 2:40 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: VF 73

Township: 22N Range: 2E Section: 32 39.714023 lat. -121.777733 long.

Temperature: Water: 17 °C Air: 18 °C

Pool Depth: at time of sampling: 14 cm estimated maximum: 18 cm
Surface Area: at time of sampling: 24 m x 7 m estimated maximum: 24 m x 8 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other _____
light moderate heavy
- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO
Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l
pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____
Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>Planaria</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	<u>yes</u>	no
Notonectidae:	<u>yes</u>	no
Belostomatidae:	yes	no
Other (specify)	<u>larva Sp.</u>	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/9/14 Time: 2:50 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 74

Township: 22N Range: 2E Section: 32 39.714272 lat. -121.777740 long.

Temperature: Water: 17 °C Air: 18 °C

Pool Depth: at time of sampling: 7 cm Surface Area: at time of sampling: 5 m x 3 m

estimated maximum: 10 cm estimated maximum: 6 m x 4 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle light horses sheep other _____ moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>Planaria</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	<u>? larvae</u>	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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1

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>Planaria</u>	

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	



Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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1

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>Planaria</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/9/14 Time: 3:20 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: LUF 61

Township: 22N Range: 2E Section: 32 39.713835° lat. -121.774594° long.

Temperature: Water: 17 °C Air: 16 °C

Pool Depth: at time of sampling: 10 cm Surface Area: at time of sampling: 7 m x 5 m

estimated maximum: 15 cm estimated maximum: 8 m x 5 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) planaria

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

7 larvae

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	<u>yes</u>	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	_____	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	<u>yes</u>	no
Notonectidae:	<u>yes</u>	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/9/14 Time: 4 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 79

Township: 21N Range: 2E Section: 04 39.710507 lat. 121.764551 long.

Temperature: Water: 16 °C Air: 15 °C

Pool Depth: Surface Area:
at time of sampling: 18 cm at time of sampling: 10 m x 5 m
estimated maximum: 23 cm estimated maximum: 12 m x 6 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other _____
light moderate heavy
- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO
Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l
pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____
Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	<u>yes</u>	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>Planaria</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	<u>yes</u>	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/9/14 Time: 4 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 20

Township: 21N Range: 2E Section: 04 39,710744' lat. -121.763766° long.

Temperature: Water: 16 °C Air: 15 °C

Pool Depth: Surface Area:
at time of sampling: 10 cm at time of sampling: 11 m x 4 m

estimated maximum: 17 cm estimated maximum: 11 m x 5 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) planaria

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

larvae

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/17/14 Time: 11 am County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 90

Township: 22 N Range: 2 E Section: 33 39.72159° lat. -121.757973° long.

Temperature: Water: 11.5 °C Air: 11 °C

Pool Depth: at time of sampling: 14 cm estimated maximum: 16 cm
Surface Area: at time of sampling: 5 m x 4 m estimated maximum: 5.5 m x 4 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle light horses sheep other moderate heavy
- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): ____ ppm or mg/l Conductivity: ____ uMHO
Dissolved NH₄: ____ ppt or ppm Dissolved Oxygen: ____ ppm or mg/l
pH: ____ Turbidity: (secchi disc depth) ____ cm or: clear to bottom ____
Salinity: ____ ppt or ppm Total Dissolved Solids (TDS): ____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) flatworms (Planaria)

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) ? larvae

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no X yes

Required color slides and/or photographs for the project site are included: ___ no ___ yes

Date: 12/17/14 Time: 11:20 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 42

Township: 22N Range: 2E Section: 33 39.723017 lat. -121.768180 long.

Temperature: Water: 11.5 °C Air: 11 °C

Pool Depth: at time of sampling: 15 cm Surface Area: at time of sampling: 7 m x 6 m

estimated maximum: 16 cm estimated maximum: 7 m x 6 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>Planaria</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/17/14 Time: 11:40 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 41

Township: 22N Range: 2E Section: 33 39.723017° lat. 72.768180° long.

Temperature: Water: 11.5 °C Air: 11 °C

Pool Depth: at time of sampling: 9 cm Surface Area: at time of sampling: 4 m x 2 m

estimated maximum: 10 cm estimated maximum: 4 m x 2 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle light horses sheep other _____ moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans: yes no
 Conchostracans: yes no
 Copepods: yes no
 Ostracods yes no
 Fish yes no
 Frogs yes no
 Salamanders yes no
 Waterfowl yes no
 Other (specify) _____

planaria

Insects: (adult or larvae)

Anisoptera: yes no
 Zygoptera: yes no
 Hydrophilidae: yes no
 Dytiscidae: yes no
 Corixidae: yes no
 Notonectidae: yes no
 Belostomatidae: yes no
 Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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Note: Please fill out the required information completely for each site visit.

Required color slides and/or photographs for the project site are included: _____ no _____ yes

Date: 12/17/14 Time: 12 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 23

Township: 22N Range: 2E Section: 32 39.725647° lat. 121.769584° long.

Temperature: Water: 11.5 °C Air: 11 °C

Pool Depth: at time of sampling: 24 cm
estimated maximum: 25 cm

Surface Area: at time of sampling: 3 m x 3 m
estimated maximum: 3 m x 3 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other _____
light moderate heavy
- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity : _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no

Other (specify) spider mite
Planaria

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no X yes

Required color slides and/or photographs for the project site are included: ___ no ___ yes

Date: 12/17/14 Time: 12:20 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 82

Township: 22N Range: 2E Section: 29 39.728809° lat. 121.771037° long.

Temperature: Water: 12 °C Air: 11 °C

Pool Depth: at time of sampling: 26 cm Surface Area: at time of sampling: 1 m x 1 m

estimated maximum: 28 cm estimated maximum: 1 m x 1 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle light horses sheep other _____
moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Notostracans:
(note reproductive status)

Species Observations (Optional) : *None*

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify) _____		

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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1

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>planaria</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)		

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet

Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Notostracans:
(note reproductive status)

Species Observations (Optional) :

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods ☒ yes ☐ no

Fish	yes	no
1	1	0
2	1	0
3	1	0
4	1	0
5	1	0
6	1	0
7	1	0
8	1	0
9	1	0
10	1	0
11	1	0
12	1	0
13	1	0
14	1	0
15	1	0
16	1	0
17	1	0
18	1	0
19	1	0
20	1	0
21	1	0
22	1	0
23	1	0
24	1	0
25	1	0
26	1	0
27	1	0
28	1	0
29	1	0
30	1	0
31	1	0
32	1	0
33	1	0
34	1	0
35	1	0
36	1	0
37	1	0
38	1	0
39	1	0
40	1	0
41	1	0
42	1	0
43	1	0
44	1	0
45	1	0
46	1	0
47	1	0
48	1	0
49	1	0
50	1	0
51	1	0
52	1	0
53	1	0
54	1	0
55	1	0
56	1	0
57	1	0
58	1	0
59	1	0
60	1	0
61	1	0
62	1	0
63	1	0
64	1	0
65	1	0
66	1	0
67	1	0
68	1	0
69	1	0
70	1	0
71	1	0
72	1	0
73	1	0
74	1	0
75	1	0
76	1	0
77	1	0
78	1	0
79	1	0
80	1	0
81	1	0
82	1	0
83	1	0
84	1	0
85	1	0
86	1	0
87	1	0
88	1	0
89	1	0
90	1	0
91	1	0
92	1	0
93	1	0
94	1	0
95	1	0
96	1	0
97	1	0
98	1	0
99	1	0
100	1	0

Frogs	yes	no
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Salamanders	yes	no
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Waterfowl	yes	no
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Other (specify) Spider mites

Planaria

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

> larvae

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species

Individuals

Accession/Catalog #Pool #

1

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>planaria</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	<u>7 larvae</u>	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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1

Note: Please fill out the required information completely for each site visit.

Anostracans:
(note reproductive status)

Notostracans:
(note reproductive status)

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	Seider mit Planaria	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	<u>yes</u>	no
Dytiscidae:	<u>yes</u>	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		
3 larvae		

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/17/14 Time: 1:35 County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: UF 60

Township: 22N Range: 2E Section: 33 39.717357 lat. -121.768155 long.

Temperature: Water: 13 °C Air: 12 °C

Pool Depth: at time of sampling: 10 cm estimated maximum: 15 cm
Surface Area: at time of sampling: 6 m x 4 m estimated maximum: 10 m x 5 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: catle horses sheep other _____
 light moderate heavy
- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO
Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l
pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____
Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>Spider mites</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	<u>? larvae</u>	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	_____	

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no

Other (specify) Chironomidae larvae
Baetis sp.

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/17/14 Time: 2:10pm County: Butte Quad: Chico

Collector(s): E. Gregg, M. Murphy Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 83

Township: 22N Range: 2E Section: 33 39.713656° lat. -121.767065° long.

Temperature: Water: 13 °C Air: 12 °C

Pool Depth: at time of sampling: 23 cm Surface Area: at time of sampling: 2.5 m x 2 m

estimated maximum: 25 cm estimated maximum: 3 m x 2 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	_____	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

? larvae

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/31/14 Time: 10:56 County: Butte Quad: Chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: ^{WF}78

Township: 21N Range: 2E Section: 04 39.710661 lat. ^{WF}121.764859 long.

Temperature: Water: 4 °C Air: 9 °C

Pool Depth: at time of sampling: 15 cm Surface Area: at time of sampling: 7 m x 5 m

estimated maximum: 28 cm estimated maximum: 11 m x 10 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Notostracans:
(note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	_____	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	<u>yes</u>	no
Dytiscidae:	<u>yes</u>	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/31/14 Time: 11:15 County: Butte Quad: Chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 79

Township: 21N Range: 2E Section: 04 39.710507° lat. -121.764551° long.

Temperature: Water: 4 °C Air: 9 °C

Pool Depth: at time of sampling: 13 cm Surface Area: at time of sampling: 9 m x 4 m

estimated maximum: 23 cm estimated maximum: 12 m x 6 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Notostracans:
(note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<input checked="" type="radio"/> yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	_____	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 12/31/14 Time: 11:30 County: Butte Quad: Chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 89

Township: 22N Range: 2E Section: 28 39.731954 lat. 121.762212 long.

Temperature: Water: 4 °C Air: 9 °C

Pool Depth: at time of sampling: 17 cm Surface Area: at time of sampling: 6 m x 5 m

estimated maximum: 23 cm estimated maximum: 7 m x 5.5 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>planaria</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	<u>yes</u>	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no X yes

Required color slides and/or photographs for the project site are included: ___ no ___ yes

Date: 2/12/15 Time: 11:20 County: Butte Quad: Chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF73

Township: 22N Range: 2E Section: 32 39.714023° lat. -121.777733° long.

Temperature: Water: 16 °C Air: 22 °C

Pool Depth: at time of sampling: 11 cm Surface Area: at time of sampling: 10 m x 2 m

estimated maximum: 18 cm estimated maximum: 24 m x 8 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
¹² / ₀₀ Copepods:	<u>yes</u>	no	Zygoptera:	yes	no
Ostracods	<u>yes</u>	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
Frogs	yes	no	Corixidae:	yes	no
Salamanders	yes	no	Notonectidae:	yes	no
Waterfowl	yes	no	Belostomatidae:	yes	no
Other (specify) _____			Other (specify) _____		

Spider mites, planaria (worms)

? eggs

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Notostracans:
(note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	<u>yes</u>	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	_____	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	<u>yes</u>	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no X yes

Required color slides and/or photographs for the project site are included: ___ no ___ yes

Date: 2/12/15 Time: 11:45 County: Butte Quad: Chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 61

Township: 22N Range: 2E Section: 32 39.713835° lat. -121.774594° long.

Temperature: Water: 20 °C Air: 22 °C

Pool Depth: at time of sampling: 8 cm estimated maximum: 15 cm
Surface Area: at time of sampling: 6 m x 3 m estimated maximum: 8 m x 5 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other _____
 light moderate heavy
- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO
Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l
pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____
Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
Copepods:	<u>yes</u>	no	Zygoptera:	yes	no
Ostracods	<u>yes</u>	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
Frogs	yes	no	Corixidae:	<u>yes</u>	no
Salamanders	yes	no	Notonectidae:	<u>yes</u>	no
Waterfowl	yes	no	Belostomatidae:	yes	no
Other (specify) _____			Other (specify) _____		

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 2/12/15 Time: 12:00 County: Butte Quad: Chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 83

Township: 22N Range: 2E Section: 33 39.713656° lat. -121.767065° long.

Temperature: Water: 15 °C Air: 22 °C

Pool Depth: at time of sampling: 20 cm Surface Area: at time of sampling: 1 m x 1 m

estimated maximum: 25 cm estimated maximum: 3 m x 2 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet **Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	_____	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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? 16 vials
green

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no X yes

Required color slides and/or photographs for the project site are included: ____ no ____ yes

Date: 2/12/15 Time: 12:10 County: Butte Quad: Chico

Collector(s): Elna Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 78

Township: 21N Range: 2E Section: 04 39.710661 lat. -121.764859 long.

Temperature: Water: 19 °C Air: 22 °C

Pool Depth: at time of sampling: 25 cm estimated maximum: 28 cm
Surface Area: at time of sampling: 8 m x 7 m estimated maximum: 11 m x 10 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other _____
 light moderate heavy
- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO
Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l
pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____
Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	<u>yes</u>	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	_____	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	<u>yes</u>	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

> larvae

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no X yes

Required color slides and/or photographs for the project site are included: ___ no ___ yes

Date: 1/12/15 Time: 12:30 County: Butte Quad: Chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 79

Township: 21N Range: 2E Section: 04 39.710507 lat. -121.764551 long.

Temperature: Water: 19 °C Air: 22 °C

Pool Depth: at time of sampling: 15 cm Surface Area: at time of sampling: 10 m x 5 m
estimated maximum: 23 cm estimated maximum: 12 m x 6 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle light horses sheep other _____
moderate heavy
- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO
Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l
pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____
Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	<u>yes</u>	no
Ostracods	<u>yes</u>	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>Planaria, velvet</u> <u>spring wren</u>	

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	<u>yes</u>	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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U.S. Fish and Wildlife Service Vernal Pool Data Sheet **Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no	Insects: (adult or larvae)		
Conchostracans:	yes	no	Anisoptera:	yes	no
^{cyclop} Copepods:	<u>yes</u>	no	Zygoptera:	yes	no
Ostracods	<u>yes</u>	no	Hydrophilidae:	yes	no
Fish	yes	no	Dytiscidae:	yes	no
Frogs	yes	no	Corixidae:	<u>yes</u>	no
Salamanders	yes	no	Notonectidae:	yes	no
Waterfowl	yes	no	Belostomatidae:	yes	no
Other (specify) _____			Other (specify) _____		
<i>Planaria,</i>			<i>? larvae</i>		

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
----------------	----------------------	----------------------------	---------------

1

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Notostracans:
(note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)		

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	(yes)	no
Belostomatidae:	yes	no
Other (specify)		

planaria

Voucher Specimens

? eggs

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species

Individuals

Accession/Catalog #

Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no X yes

Required color slides and/or photographs for the project site are included: ___ no ___ yes

Date: 2/12/15 Time: 1:40 County: Butte Quad: Chico

Collector(s): Elena Gregg Permit #: TE-049693

Site/Project Name: Valley's Edge Pool #: WF 89

Township: 22N Range: 2E Section: 28 39.731954° lat. -121.762212° long.

Temperature: Water: 22 °C Air: 25 °C

Pool Depth: at time of sampling: 19 cm Surface Area: at time of sampling: 6.5 m x 5 m

estimated maximum: 23 cm estimated maximum: 7 m x 5.5 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
light moderate heavy

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity : _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
 (note reproductive status)

Notostracans:
 (note reproductive status)

Species Observations (Optional) :

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	<u>yes</u>	no <i>See shrimp</i>
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)	<u>Planaria</u>	

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

7 eggs

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

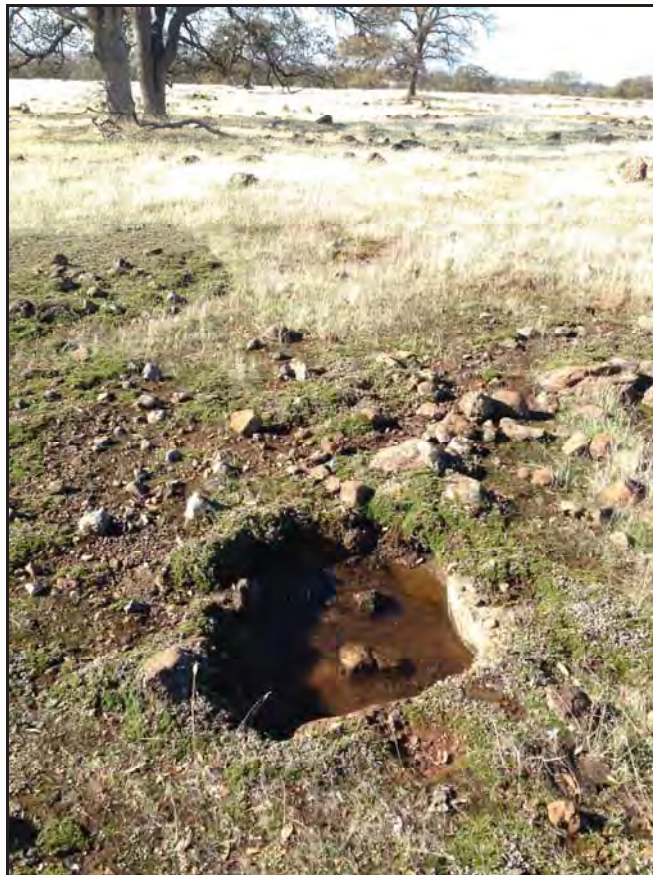
<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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APPENDIX C

Survey Location Photographs



WF 89



Sample Point 1



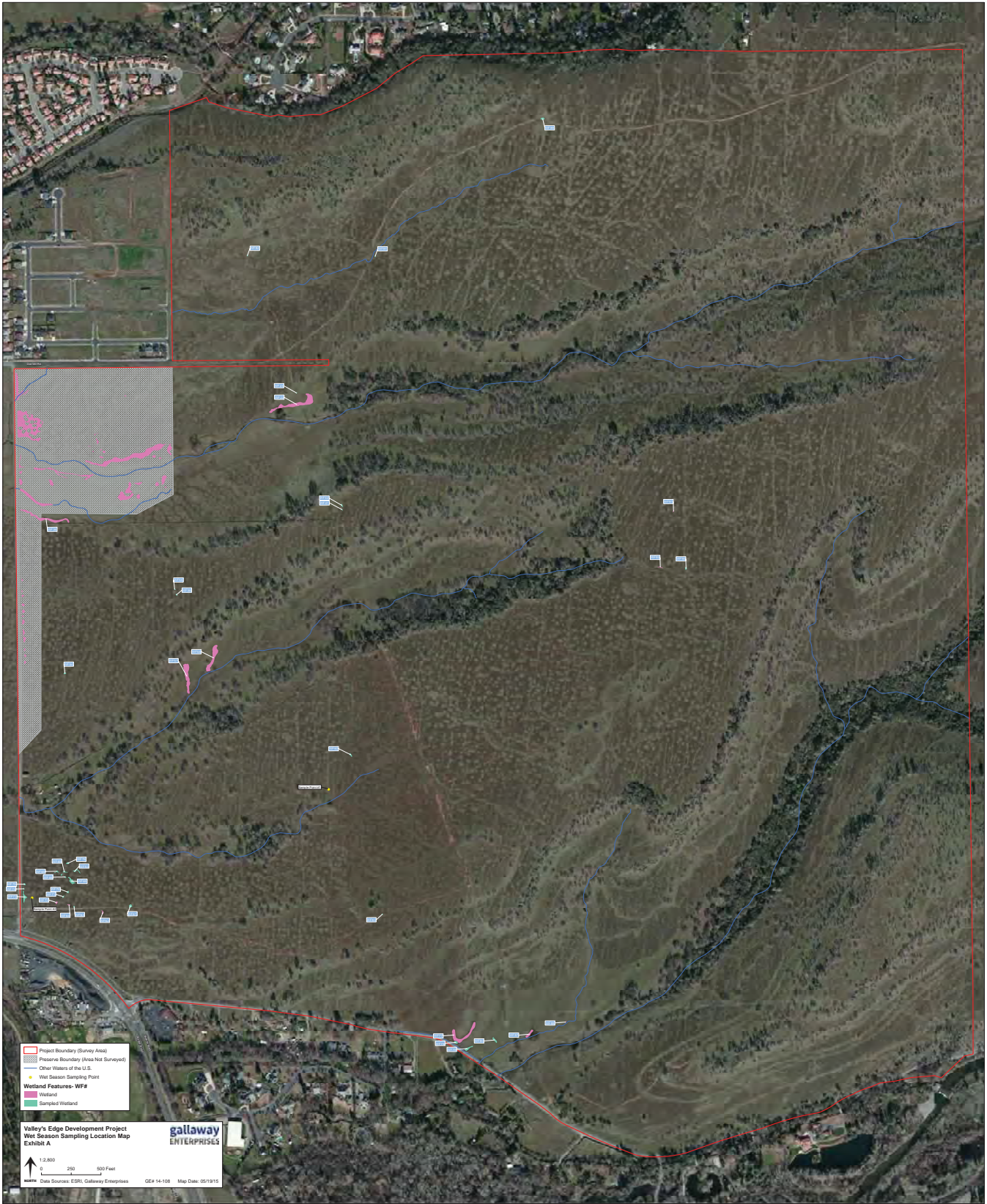
WF 73



WF 74

EXHIBIT A

Wet Season Sampling Location Map



2016 Guideline-level Dry Season Survey for Federally Listed Large Branchiopods

Valley's Edge

Butte County, California



Prepared For:

Gallaway Enterprises, Inc.

18 November 2016

CONTENTS

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LIST OF ATTACHMENTS

Attachment A – Dry Season Sampling Locations
Attachment B – Representative Site Photographs
Attachment C – Results of the Dry Season Soil Examinations

1.0 INTRODUCTION

On behalf of Gallaway Enterprises, Inc. (Gallaway), ECORP Consulting, Inc. (ECORP) conducted a U.S. Fish and Wildlife (USFWS) guideline-level dry season survey for federally listed large branchiopods at the Valley's Edge property (Study Area) located in Butte County, California. The purpose of the survey was to determine the presence or presumed absence of large branchiopod species (fairy shrimp, tadpole shrimp, and clam shrimp) listed as threatened or endangered under the federal Endangered Species Act (ESA) (e.g., vernal pool fairy shrimp [*Branchinecta lynchi*] and vernal pool tadpole shrimp [*Lepidurus packardii*]). The surveys were conducted under the authority of USFWS Recovery Permit No. TE-012973 of Section 10(a)(1)(A) of the ESA, 16 U.S.C. 1531 et seq. and in compliance with the 31 May 2015 *Survey Guidelines for the Listed Large Branchiopods* (Guidelines) (USFWS 2015). This report summarizes the methods and results of the dry season survey for the Study Area.

1.1 Location

The Study Area is located north of Humbug Road and east of Potter Road in Butte County, California (Figure 1. *Study Area Location and Vicinity*). The Study Area corresponds to portions of Sections 3-5, Township 21 North, Range 2 East and to portions of Sections 27-29 and 32-34; Township 22 North; Range 2 East (Mount Diablo Base Meridian) of the "Chico, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1978). The approximate center of the Study Area is located at 39.721248 North and -121.762540 West within the Butte Creek Watershed (Hydrologic Unit Code #18020156, USGS 2015).

1.2 Dry Season Sampling Locations

Gallaway determined a total of 26 wetland features within the Study Area as potential habitat for federally listed large branchiopods. Six of these features are within the proposed Preserve Boundary. A map of the Study Area and sampling locations are included as Attachment A.

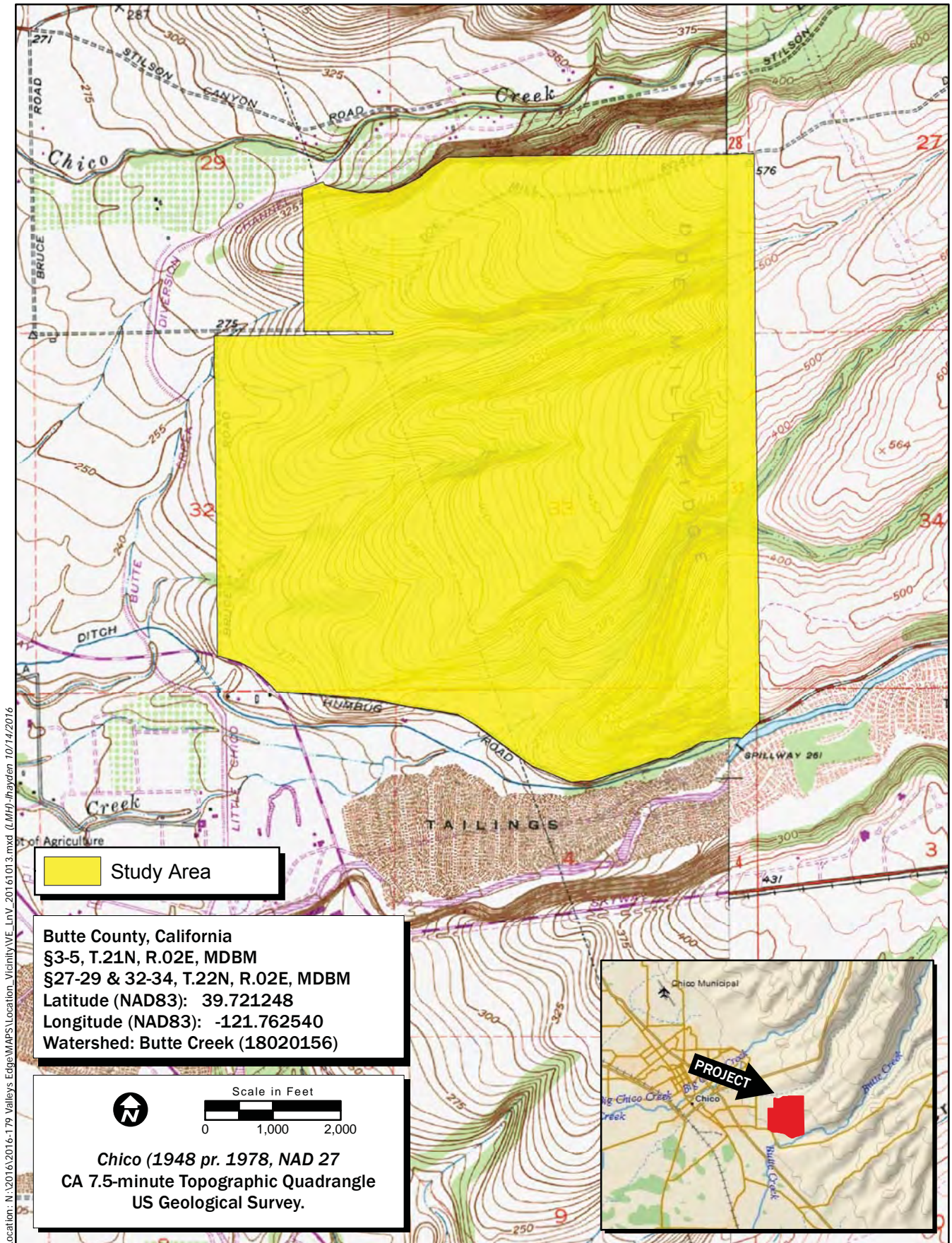


Figure 1. Study Area Location and Vicinity

2.0 METHODS

Survey methods followed the “dry season survey” protocols outlined in the Guidelines (USFWS 2015). Permitted ECORP biologist Clay DeLong collected dry season soil samples on 13 September 2016.

Dry-season surveys involved the collection of the top one to three cm of pool sediment from the lowest topographic areas within each feature identified as potential federally listed large branchiopod habitat on-site. A hand spade or similar tool was used to collect the sample at each feature and wherever possible, substrate samples were collected in chunks to prevent damage to large branchiopod eggs. The number and amount of soil/substrate samples collected was proportionate to the size of the feature and in accordance with the requirements laid out in Table 1 of the Guidelines (USFWS 2015). Soil samples were placed into liter-size plastic freezer bags and marked with the project name, aquatic feature number, and date. The soil samples were then transferred to ECORP's laboratory.

In the laboratory, a brine solution was prepared by mixing table salt (NaCl) with lukewarm tap water in a large container. The soil material collected from each aquatic feature was placed into the brine solution, and worked by hand to break down soil structure. The organic material rising to the top of the brine solution was poured into a 710-micron-diameter pore-size sieve stacked atop a 150-micron-diameter pore-size sieve. The soil material was processed through the top sieve by flushing it with lukewarm tap water while gently rubbing it with a soft-bristle brush. The organic material retained from the 150-micron-diameter pore-size sieve was then removed and thinly spread into plastic petri dishes.

Under the supervision of permitted dry season biologist Todd Wood, all sieved fractions were microscopically inspected for the presence of large branchiopod eggs by ECORP biologist Daniel Wong. Total egg abundance information for each sampled feature was reported in terms of: low abundance (estimate of 1-10 eggs/sampled feature); medium abundance (estimate of 11-50 eggs/sampled feature); and high abundance (estimate of more than 50 eggs/sampled feature). If no large branchiopod eggs were observed, the field was left blank.

ECORP's branchiopod egg reference collection and scanning electron micrographs of eggs (Gilchrist 1978, Hill and Shepard 1998, and Mura 1991) were used to identify and compare any branchiopod eggs observed within the soil samples. Evidence of other aquatic invertebrates found was also noted on the lab data sheet.

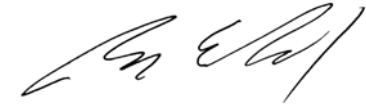
3.0 RESULTS

A total of 26 wetland features were considered potential federally listed large branchiopod habitat by Gallaway and sampled using dry season techniques (see Attachment A).

No eggs belonging to federally listed large branchiopods were observed within any of collected soil samples within the Study Area. Results of the soil examinations are included as Attachment C and representative photographs of the sampled features are included as Attachment B.

Other invertebrate taxa observed in the soil samples included hydracarina, cladocera, collembola, insect exo-skeletons, microturbellaria, nematoda, and ostracoda (see Attachment C).

"We certify that the information in this survey report and attached exhibits fully and accurately represents our work."



Todd Wood

11 October 2016

Date



Clay DeLong

11 October 2016

Date



Daniel Wong

11 October 2016

Date

5.0 REFERENCES

- Gilchrist, B. M. 1978. Scanning electron microscope studies of the egg shell in some Anostraca (Crustacea: Branchiopoda). *Cell Tiss. Res.* 193: 337-351.
- Hill, R. E., and W. D. Shepard. 1998. Observation on the identification of California anostracan cysts. *Hydrobiologia* 359: 113-123.
- Mura, G. 1991. SEM morphology of resting eggs in the species of the genus *Branchinecta* from North America. *J. Crust. Biol.* 11: 432-436.
- U.S. Fish and Wildlife Service (USFWS). 2015. Survey Guidelines for the Listed Large Branchiopods. 24 pp. Dated: 31 May 2015.
- U.S. Geological Survey (USGS). 1978. "Chico, California" 7.5-minute Quadrangle. Geological Survey. Denver, Colorado.
- U.S. Geological Survey (USGS). 2015. Watershed Boundary Dataset for Placer County, California. Available at <http://datagateway.nrcs.usda.gov>. Accessed 21 September 2015.

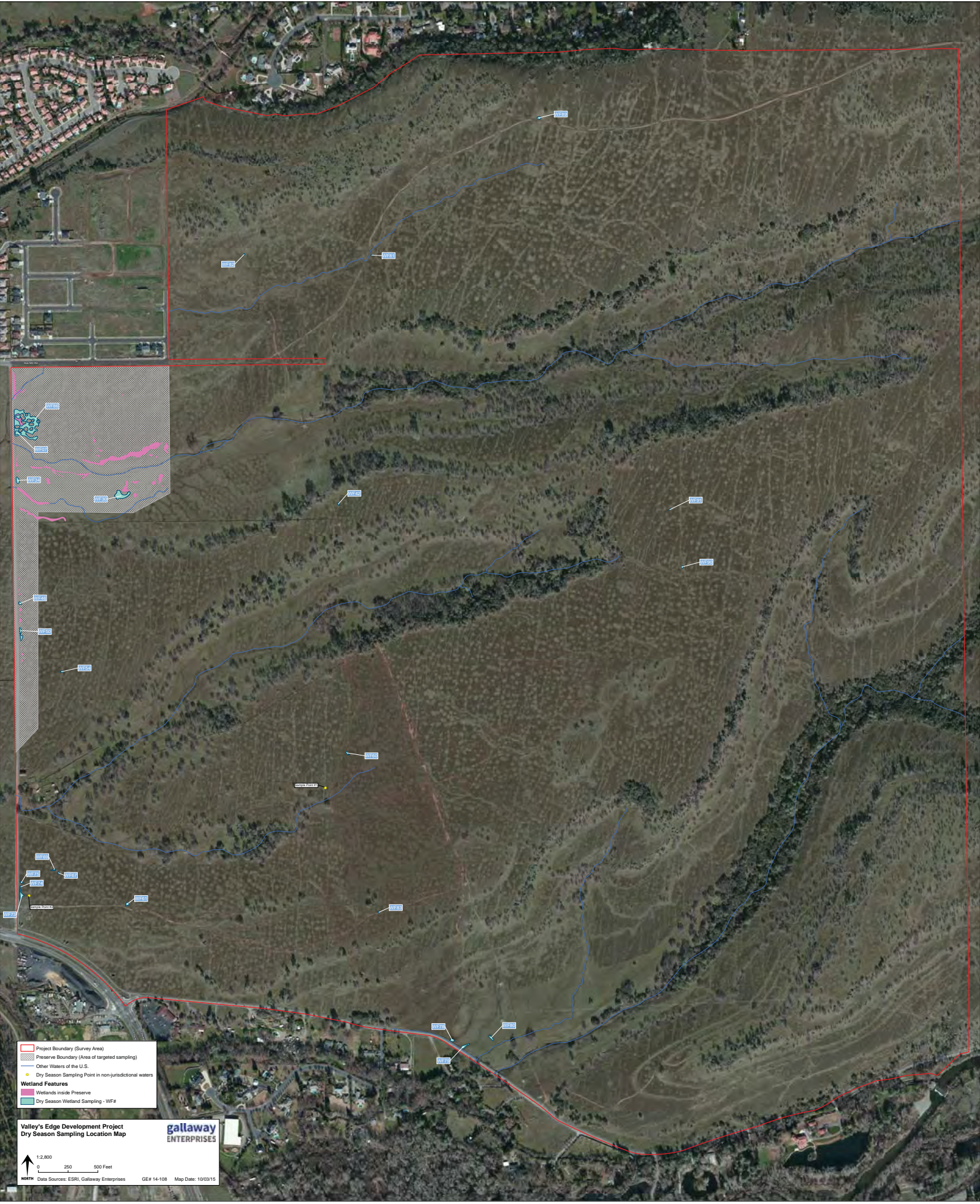
LIST OF ATTACHMENTS

Attachment A – Dry Season Sampling Locations

Attachment B – Representative Site Photographs

Attachment C – Results of the Dry Season Soil Examinations

Dry Season Sampling Locations



- Project Boundary (Survey Area)
- Preserve Boundary (Area of targeted sampling)
- Other Waters of the U.S.
- Dry Season Sampling Point in non-jurisdictional waters
- Wetland Features**
- Wetlands inside Preserve
- Dry Season Wetland Sampling - WF#

Valley's Edge Development Project
Dry Season Sampling Location Map



1:2,800
0 250 500 Feet
NORTH
Data Sources: ESRI, Gallaway Enterprises
GE# 14-108
Map Date: 10/03/15

ATTACHMENT B

Representative Site Photographs



Photograph 1. Sample Point #2 in the southwestern portion of the Study Area, view southwest. Photo taken by Clay DeLong on 13 September 2016.



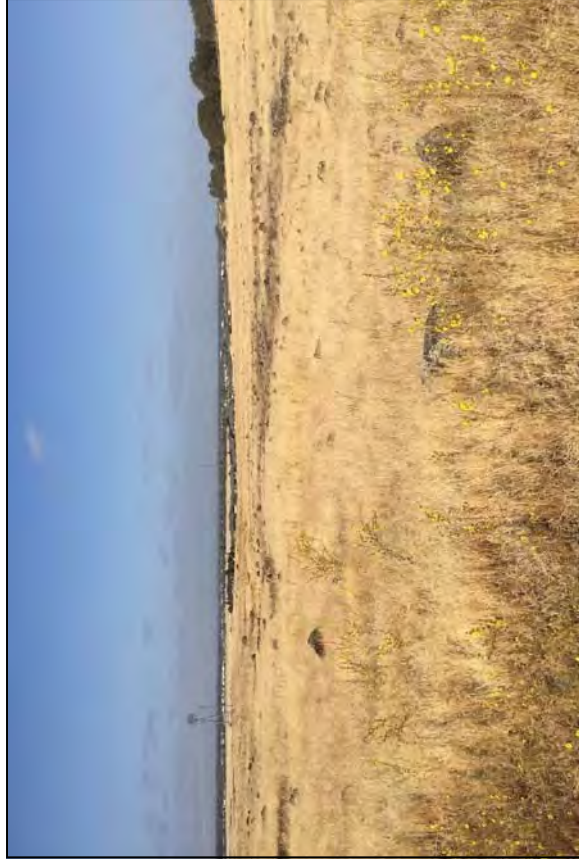
Photograph 2. WF-60 in the central portion of the Study Area, view north. Photo taken by Clay DeLong on 13 September 2016.



Photograph 3. WF-80 in the southern portion of the Study Area, view south. Photo taken by Clay DeLong on 13 September 2016.



Photograph 4. WF-81 in the northwestern portion of the Study Area, view southeast. Photo taken by Clay DeLong on 13 September 2016.



Photograph 5. Representative photo in the central portion of the Study Area, view northwest. Photo taken by Clay DeLong on 13 September 2016.



Photograph 6. Representative photo in the southeastern portion of the Study Area, view north. Photo taken by Clay DeLong on 13 September 2016.



Photograph 7. Representative photo in the southern central portion of the Study Area, view east. Photo taken by Clay DeLong on 13 September 2016.



Photograph 8. Representative photo in the southwestern portion of the Study Area, view west. Photo taken by Clay DeLong on 13 September 2016.

ATTACHMENT C

Results of the Dry Season Soil Examinations

Vernal Pool Branchiopod Dry Season
Project Name: Valley's Edge **Permitted Biologist:** Todd Wood **Project Number:** 2016-179

Feature Number	Sample Processing Personnel	Date Collected	Date Viewed	Insect EXo-Skeletons	Micro-Turbellaria Live/Cysts	Cladocera Ehipippia	Ostracods Live/Carapaces	Copepods Live	Hydracarina Live	Nematoda	Collembola
Sample Pt.1	D. Wong	9/13/2016	9/27/2016	X	X				X	X	X
Sample Pt.2	D. Wong	9/13/2016	9/28/2016	X	X				X		
WF-07	D. Wong	9/13/2016	9/27/2016	X	X		X		X	X	X
WF-30	D. Wong	9/13/2016	9/27/2016	X	X	X	X		X		
WF-34	D. Wong	9/13/2016	9/23/2016	X	X				X	X	X
WF-42	D. Wong	9/13/2016	9/28/2016	X					X		X
WF-46	D. Wong	9/13/2016	9/26/2016	X	X				X	X	X
WF-50	D. Wong	9/13/2016	9/23/2016	X	X				X	X	
WF-54	D. Wong	9/13/2016	9/26/2016	X					X		X
WF-60	D. Wong	9/13/2016	9/26/2016	X					X		X
WF-64	D. Wong	9/13/2016	9/28/2016	X			X		X	X	X
WF-67	D. Wong	9/13/2016	9/27/2016	X	X				X	X	X
WF-69	D. Wong	9/13/2016	9/27/2016	X	X				X	X	X
WF-73	D. Wong	9/13/2016	9/26/2016	X					X	X	X
WF-74	D. Wong	9/13/2016	9/27/2016	X					X	X	X
WF-75	D. Wong	9/13/2016	9/28/2016	X	X				X	X	X
WF-78	D. Wong	9/13/2016	9/28/2016	X	X		X		X		
WF-79	D. Wong	9/13/2016	9/26/2016	X					X		X
WF-80	D. Wong	9/13/2016	9/28/2016	X	X				X		X
WF-81	D. Wong	9/13/2016	9/26/2016	X	X				X	X	X
WF-82	D. Wong	9/13/2016	9/26/2016	X	X				X		X
WF-83	D. Wong	9/13/2016	9/27/2016	X			X		X	X	X
WF-86	D. Wong	9/13/2016	9/27/2016	X	X				X	X	X
WF-89	D. Wong	9/13/2016	9/27/2016	X					X	X	X
WF-90	D. Wong	9/13/2016	9/28/2016	X	X				X		
WF-91	D. Wong	9/13/2016	9/27/2016	X					X		

Note: Large branchiopod egg abundance denoted as follows: L = low abundance, estimate of 1-10 eggs/sampled feature; M = medium abundance, estimate of 11-50 eggs/sampled feature; H = high abundance, estimate of more than 50 eggs/sampled feature.