

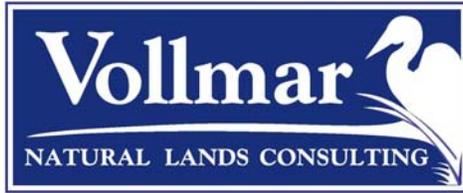


Newman Community Conservation Area Master Plan
Initial Study and Proposed Mitigated Negative Declaration
March 2021

APPENDIX B: Biological Resource Evaluation



Cover photograph: courtesy of Vollmar Natural Lands Consulting



SACRAMENTO OFFICE
2401 Capitol Ave
Sacramento, CA 95816
Phone: 916/758-6928
Fax: 510/559-9605
www.vollmarconsulting.com

Biological Resource Evaluation



Newman Community Conservation Area City of Newman, Merced County, California

Prepared for:

**The City of Newman
938 Fresno St, Newman CA 95360
Contact: Kathryn Reyes | (209) 862-4448**

Prepared by:

**Vollmar Natural Lands Consulting
2401 Capitol Ave, Sacramento CA 95816
Contact: Cassie Pinnell | (916) 758-6928**

February 2021

TABLE OF CONTENTS

1.0 INTRODUCTION	1
1.1 Special-status Species	2
1.2 Critical Habitat	4
1.3 Potential Impacts to Additional Resources	4
2.0 PROJECT LOCATION	5
3.0 METHODS	5
3.1 Preliminary Review.....	5
3.2 Site Visit.....	5
4.0 EXISTING CONDITIONS.....	7
5.0 RESULTS AND AVOIDANCE MEASURES	10
5.1 Special-status Species	10
5.1.1 Federal or State Listed Wildlife Species	11
5.1.2 Non-listed Special-Status Wildlife Species.....	15
5.1.3 Migratory and Nesting Birds	20
5.1.4 Special-status Plant Species and Sensitive Plant Communities	21
5.2 Wetlands or Waters of the U.S.....	22
5.3 Avoidance and Minimization Measures.....	22
6.0 REFERENCES	29

FIGURES AND APPENDICES

Figure 1. Regional Vicinity Map	2
Figure 2. USGS Topographic Map.....	6
Figure 3. Site Habitat Map.....	8
Figure 4. Regional Special-Status Species Map	13

Table 1. Avoidance and Minimization Measures for NCCA Project Construction, Operations, and Maintenance.....	23
--	----

- Appendix A. Representative Site Photographs
- Appendix B. Special-status Species Documented within Project Region
- Appendix C. Observed Plant Species Inventory
- Appendix D. City of Newman Project Site 2019-2020 90-Day Report

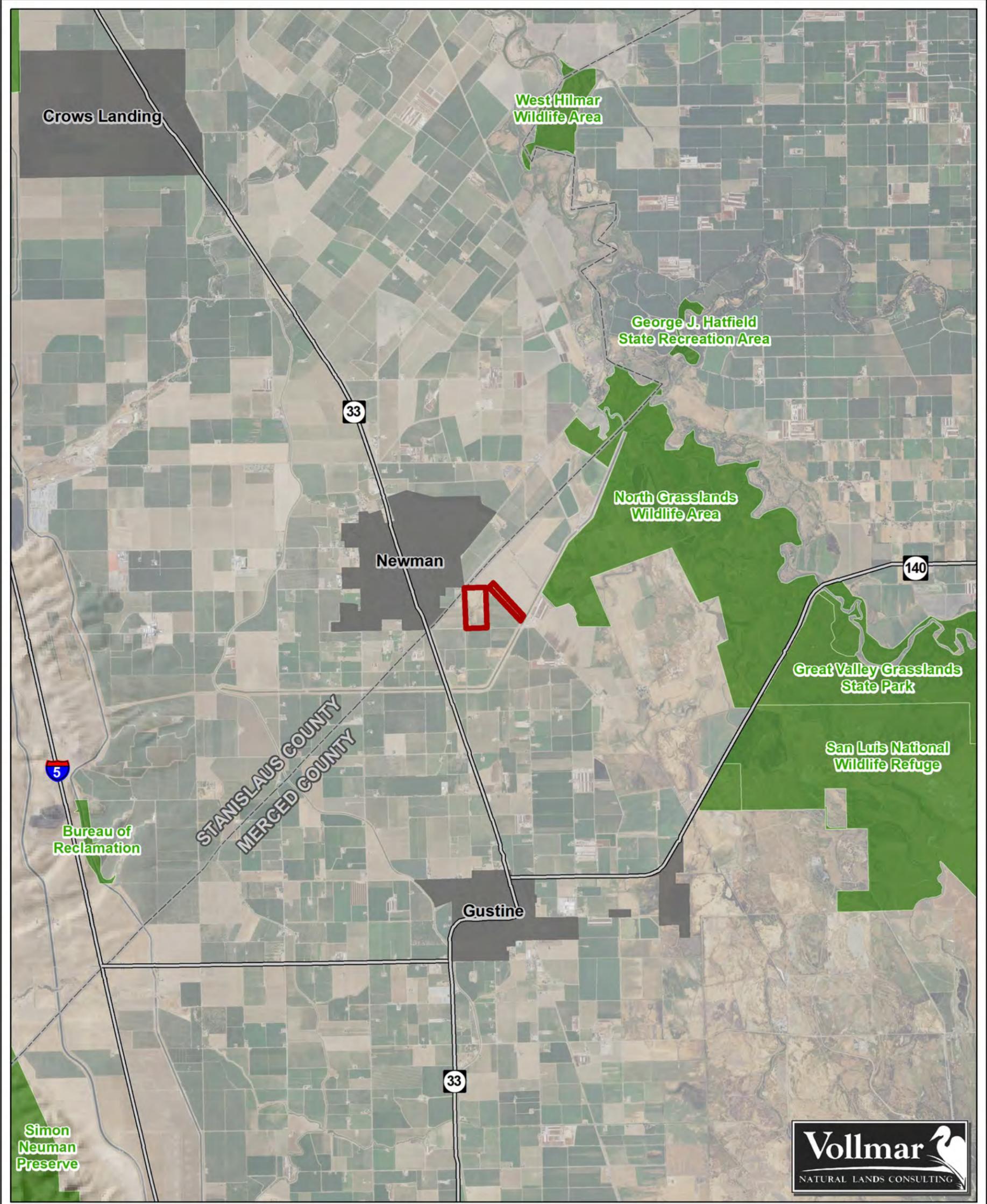
1.0 INTRODUCTION

This report presents the methods and results of a biological habitat evaluation conducted by Vollmar Natural Lands Consulting, Inc. (VNLC) within two parcels and a small section of Miller Ditch (Study Area) owned by the City of Newman (City) (**Figure 1**). These parcels represent the site of the planned Newman Community Conservation Area ('NCCA'). The NCCA will support four separate and independent, but complementary projects. These will include habitat restoration and creation projects, a multi-use trail system, and other amenities that will provide public access, nature viewing, and nature- and conservation-oriented education benefits to the community.

The NCCA is planned to occupy two parcels acquired by the City in 2014 for this specific purpose: a 78-acre parcel located at the southeast corner of Canal School Road and Inyo Avenue and a 24-acre parcel located nearby, northeast of Brazo Road. A program of four separate but complementary projects is envisioned at the NCCA:

- In the northwest portion of the 78-acre parcel, the Newman Environmental Wetland System (**NEWS project**), an approximately 21-acre constructed wetland complex that will treat stormwater and dry season runoff from the City and surrounding agricultural lands prior to discharge to the Newman Wasteway and, ultimately, the San Joaquin River
- In the central and east portions of the 78-acre parcel, extending to the central and south portions of the 24-acre parcel, an approximately 11-acre seasonal wetland, riparian, and grassland restoration project (**wetland project**) emphasizing natural sequestration of greenhouse gases (GHGs)
- In the southwest portion of the 78-acre parcel, an additional approximately 16-acre constructed wetland project that is being planned in collaboration with the Environmental Systems Graduate Group at the University of California, Merced (UC Merced) Department of Civil and Environmental Engineering to treat water from the Miller Ditch, with a focus on removing agricultural pollutants (**Miller Ditch Treatment Wetland project**) (MDTW, MDTW project)
- In the east and southeast portions of the 78-acre parcel, the **Newman Nature Park**, which is being planned with community input and may include a wide range of facilities such as a community gathering plaza, outdoor classroom areas, a nature-themed play area, and native plant, rainwise garden, and low-impact development demonstration areas, as well as an unpaved trail network and interpretive signage extending throughout the 78-acre parcel to enable appropriate public recreational access and, ultimately, tie all of the projects together

This habitat evaluation was conducted to identify and characterize existing conditions as well as assess the potential for special-status species, sensitive habitats, and jurisdictional features to occur within the Study Area.



Legend

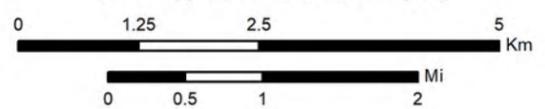
- Study Area
- County Boundary
- Urban Area
- Public Land
- Highway

FIGURE 1
Regional Vicinity Map
 Newman Community Conservation Area
 Merced County, California

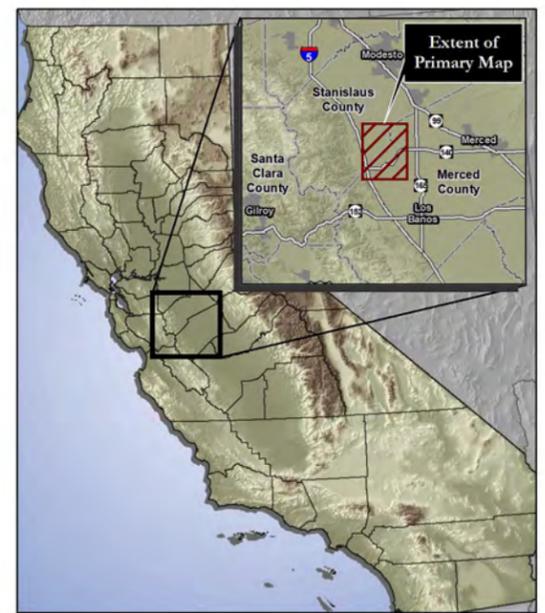


1:75,000

(1 in. = approx. 1.2 mi at tabloid layout)



Data Sources: EW, 2016 | USGS, Various Years
 GAP Project, 1998 | USDA NAIP, 2018
 US HUD, 2018 | CERES, 2012
 GIS/Cartography by: K. Chinn, May 2020
 Map File: Vicinity_445_B-P_2020-0601.mxd



1.1 Special-status Species

Based on habitat requirements and regional distribution, four State or Federal Threatened (ST, FT) or Endangered (SE, FE) wildlife species have potential or low potential to occur within the Study Area (also see **Section 5.1.1** and **Appendix B**):

- Swainson's Hawk (*Buteo swainsoni*) – ST;
- Tricolored Blackbird (*Agelaius tricolor*) – ST, State Species of Special Concern (SSC);
- San Joaquin kit fox (*Vulpes macrotis mutica*) – FE, ST; and
- Giant garter snake (*Thamnophis gigas*) – FT, ST, SSC.

In addition, seven non-listed special-status animals have potential or low potential to occur within the Study Area (see **Section 5.1.2** and **Appendix B**):

- Northwestern pond turtle (*Actinemys marmorata*) – SSC;
- Western spadefoot (*Spea hammondi*) – SSC;
- Burrowing Owl (*Athene cunicularia*) – SSC;
- Northern Harrier (*Circus hudsonius*) – SSC;
- Yellow-billed Magpie (*Pica nuttalli*) – Federal Bird of Conservation Concern (BCC);
- Loggerhead Shrike (*Lanius ludovicianus*) – SSC; and
- American badger (*Taxidea taxus*) – SSC.

Five State or Federal Threatened or Endangered wildlife species with potentially suitable habitat present within the Study Area have been excluded from this report based on recent survey findings. Conservancy fairy shrimp (*Branchinecta conservatio*) (FE), longhorn fairy shrimp (*B. longiantenna*) (FE), vernal pool fairy shrimp (*B. lynchi*) (FT), and vernal pool tadpole shrimp (*Lepidurus packardi*) (FE) were excluded based on the results of protocol-level wet season and dry season surveys conducted in the winter of 2019 (**Appendix D**, City of Newman Project Site 2019-2020 90-Day Report). California tiger salamander (FT, ST) was excluded based on lack of suitable breeding habitat within the Study Area, as documented during the protocol-level surveys (ponding duration in all wetlands onsite was too short to support breeding). Although the grassland and burrows onsite could provide suitable refugial habitat for California tiger salamander, the site is surrounded by an extensive buffer of unsuitable habitat (agricultural fields). Additionally, the nearest documented occurrence is 3.6 miles away which is farther than California tiger salamander are known to travel overland (USFWS 2017). See **Appendix B** for more information on these species and habitat requirements.

There is suitable habitat and potential to occur within the Study Area for six non-listed plant species with California Rare Plant Rank (CRPR) designations by the California Native Plant Society (CNPS) (see **Section 5.1.4** and **Appendix B**). CNPS protocol-level plant surveys commenced in spring 2020 and finished in July 2020. The following six species have suitable habitat and potential to occur:

- Crownscale (*Atriplex coronata* var. *coronata*) – CRPR 4.2;
- Heartscale (*Atriplex cordulata* var. *cordulata*) – CRPR 1B.2;
- Vernal pool smallscale (*Atriplex persistens*) – CRPR 1B.2;
- Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) – CRPR 4.2;
- Lesser saltscale (*Atriplex minuscula*) – CRPR 1B.1; and
- San Joaquin spearscale (*Extriplex joaquinana*) – CRPR 1B.2.

Although there is suitable or marginal habitat within the Study Area for one State-listed plant species and 12 non-listed plant species, they have been excluded from this report based on recent protocol-level survey findings. According to survey results, these 13 species have not been observed and thus are presumed absent from the site: Delta button-celery (*Eryngium racemosum*) (SE, CRPR 1B.1), alkali milk-vetch (*Astragalus tener* var. *tener*) (CRPR 1B.2), crownscale (*Atriplex depressa*) (CRPR 1B.2), spiny-sepaled button-celery (*Eryngium spinosepalum*) (CRPR 1B.2), diamond-petaled California poppy (*Eschscholzia rhombipetala*) (CRPR 1B.1), vernal barley (*Hordeum intercedens*) (CRPR 3.2), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*) (CRPR 1B.1), little mousetail (*Myosurus minimus* ssp. *apus*) (CRPR 3.1), shining navarretia (*Navarretia nigelliformis* ssp. *radians*) (CRPR 1B.2), prostrate vernal pool navarretia (*Navarretia prostrata*) (CRPR 1B.1), California alkali grass (*Puccinellia simplex*) (CRPR 1B.2), Sanford's arrowhead (*Sagittaria sanfordii*) (CRPR 1B.2), and Slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*) (CRPR 2B.2).

The project site could also support nesting and migrating birds protected by the Migratory Bird Treaty Act (see **Section 5.1.3**) and California Fish and Game Code 3503.

1.2 Critical Habitat

The site is not located within any designated critical habitat.

1.3 Potential Impacts to Additional Resources

There are a series of large, mature willow trees (*Salix* sp.), Mexican fan palms (*Washingtonia robusta*), small cultivated fruit trees, and a mid-sized walnut tree (*Juglans hindsii*) directly outside the boundaries of the Study Area which may provide valuable nesting bird and raptor habitat, and may be protected under local ordinances. There are 12.183 acres of potential jurisdictional Waters of the United States and of the State of California within in the Study Area, including 0.142-acre of Coastal and Valley Freshwater Marsh, a CDFW Sensitive Natural Community. There are numerous large and small mammal burrows, most likely California ground squirrel (*Otospermophilus beecheyi*) and gopher, that are present in the Study Area. The burrows may provide valuable refugial habitat for listed wildlife species.

2.0 PROJECT LOCATION

The Study Area is located in Merced County immediately southeast of the Stanislaus County–Merced County border, east of State Highway 33 and just outside the southeastern border of the City of Newman (**Figure 1**). The Assessor’s Parcel Numbers (APN) for the 78-acre parcel are 054-050-019 and 054-050-020, and the APN for the 24-acre parcel is 054-050-010. The Study Area is within the Orestimba Landgrant, and mapped within the Newman 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle (**Figure 2**). The 24-acre parcel also falls within the Gustine 7.5-minute USGS quadrangle.

The Study Area can be accessed from I-5 heading south by exiting at Crows Landing, then turning left (east) onto Fink Road, after 4 miles turning right (southeast) onto State Highway 33, and after 6 miles turning left (east) onto Inyo Avenue. Inyo Avenue becomes East Inyo Avenue, which dead ends at Canal School Road at the northwestern corner of the 78-acre parcel. The western border of the 78-acre parcel continues south to the intersection of Canal School Road and Brazo Road. A privately-owned parcel separates the 78-acre parcel and the 24-acre parcel. The 24-acre parcel can be accessed by walking east along the levee that runs along the northern edge of the 78-acre parcel.

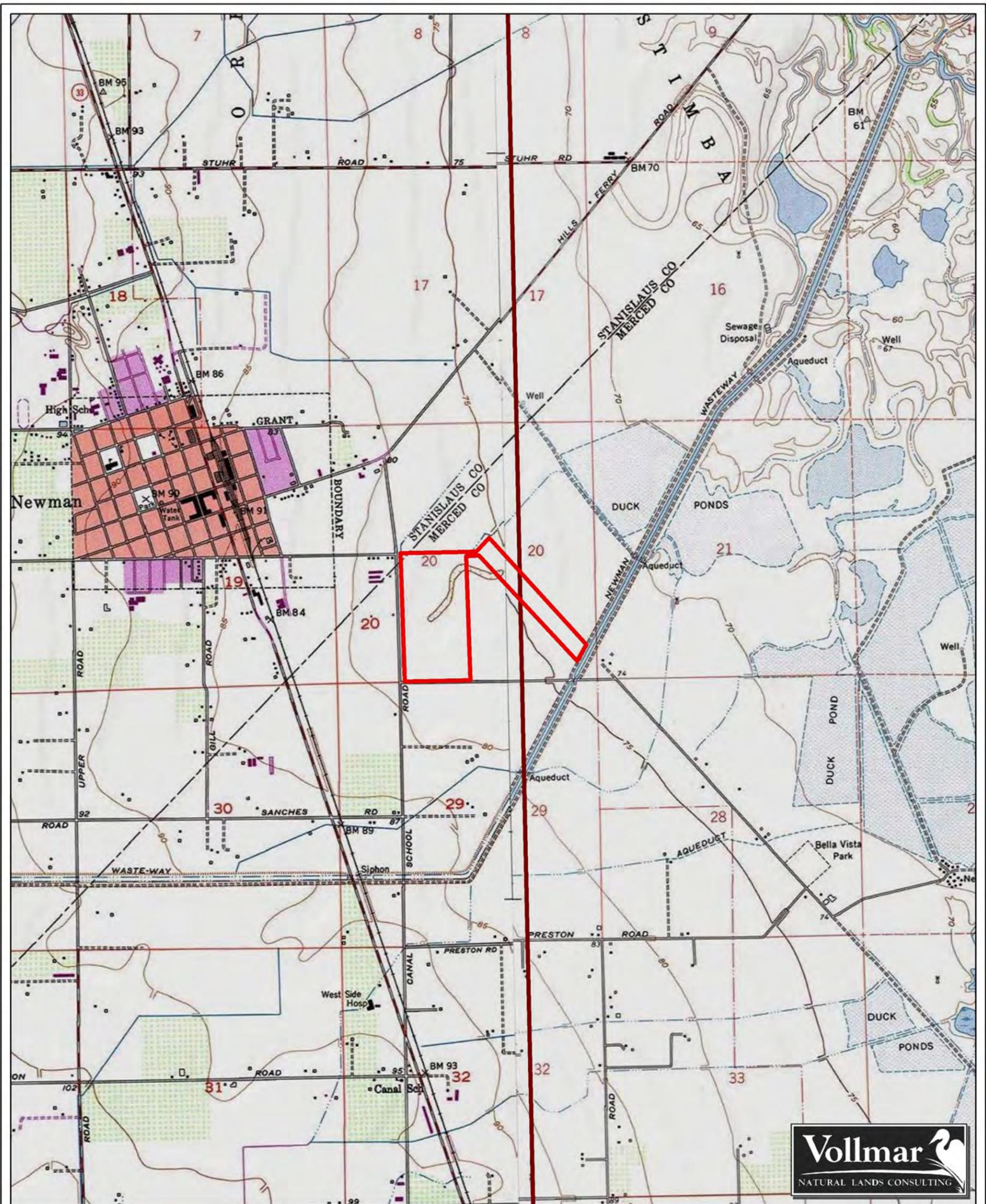
3.0 METHODS

3.1 Preliminary Review

Prior to the site visit, VNLC biologists reviewed the most recent version of the California Natural Diversity Database (CNDDB 2020) to identify special-status plant and wildlife observations in the project vicinity. Additionally, the U.S. Fish and Wildlife Service (USFWS) Information Planning and Consultation System (IPaC) (USFWS 2020) was also reviewed to help evaluate the potential for federally listed species to occur in the study area. A nine-quad search for rare and listed plants was conducted through the CNPS online Inventory of Rare and Endangered Plants (CNPS 2020). The species potentially present in the quadrant containing the project site are listed in **Appendix B**. The site’s aerial imagery, project description, and general regional conditions were also reviewed prior to the site visit.

3.2 Site Visit

The biological habitat evaluation was conducted by Jake Schweitzer, VNLC Senior Ecologist, and Misaki Yonashiro, VNLC Staff Ecologist. The ecologists conducted a site visit and reconnaissance-level survey on March 10, 2020. They walked the project site to gain complete visual coverage, and recorded all observed flora and wildlife species, general conditions, and notable habitat features. A search was conducted for jurisdictional features (wetlands and other waters, etc.), sensitive habitats (native grasslands, etc.), and habitat potential for special-status species (nesting potential, burrows or dens, etc.). Photographs showing representative site conditions were recorded as well; these are included in **Appendix A**.



Legend

- Study Area
- USGS 1:24k Quad Boundary

FIGURE 2
USGS Topographic Map

Newman Community Conservation Area
Merced County, California



1:24,000

(1 in. = approx. 0.4 mi at tabloid layout)



Sources: Vollmar Consulting, 2019 | National Geographic, 2013
USGS, Gustine and Newman Quads, 1983
Map Produced By: E. Smith, K. Chinn, May 2020
Map File: Vicinity_DRG_445_B-P_2020-0601



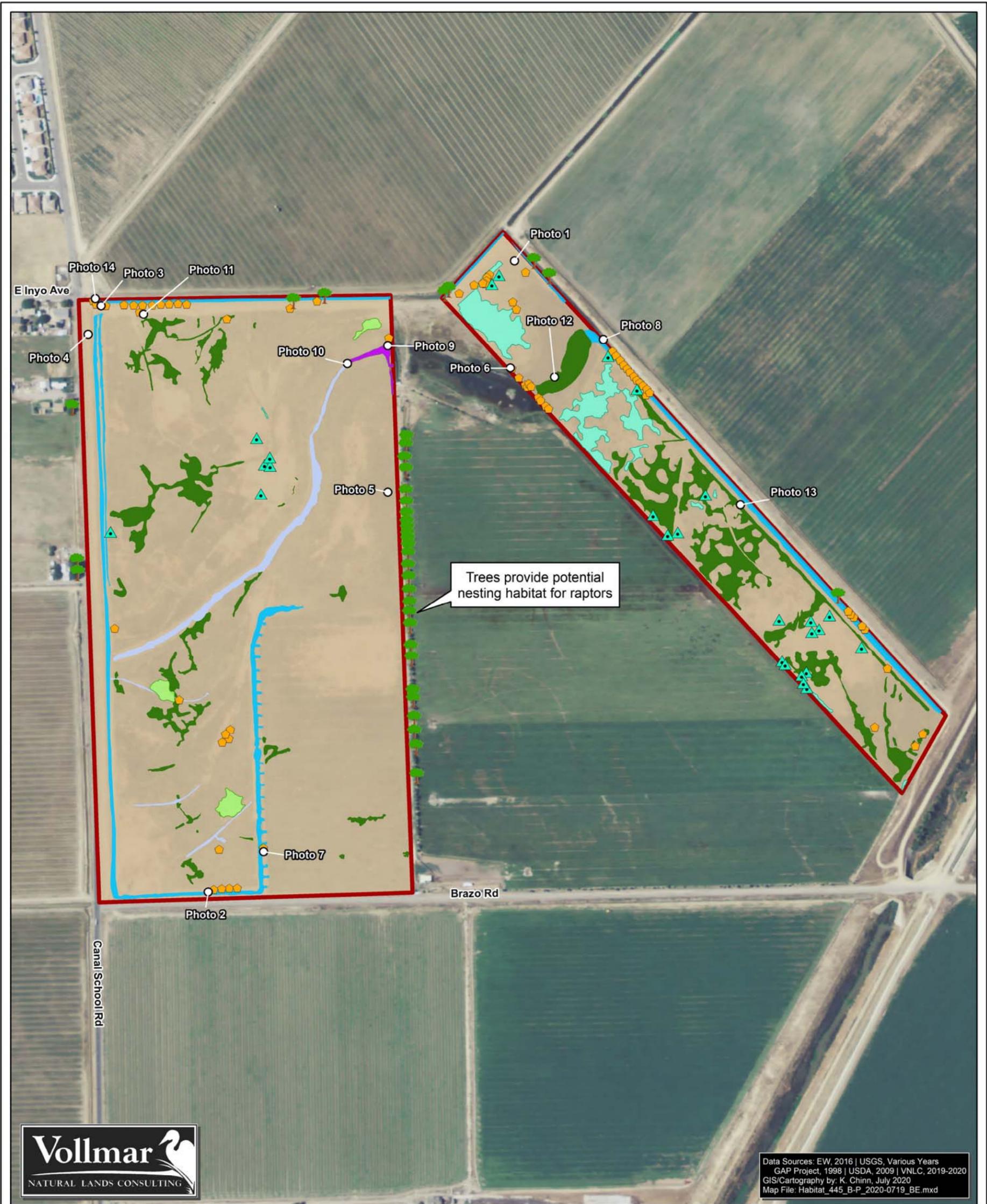
4.0 EXISTING CONDITIONS

Historically, the Study Area was part of the large floodplain and tributary complex draining generally eastward to the San Joaquin River. Based on a review of historic aerial photographs, the tributary was hydrologically cut off from the San Joaquin River during the 20th century by berms, ditches and roads. Flooding from the river has been reduced by dams and diversions of water via a vast network of irrigation canals.

While land use in the vicinity of the Study Area currently consists primarily of urban development and intensive agricultural modification, the Study Area is substantially less modified compared to the surrounding land use. In recent years, the Study Area has primarily functioned as rangeland for cattle grazing. Although the Study Area has been altered, it still supports remnant wetland features. Due to a long history of ditching and irrigating, the historic extent of the wetlands is largely unknown. Current features, such as a depression swale that bisects the site, are likely a combination of heavily altered natural features and anthropogenic features from previous land uses. Depression areas still support wetland features, indicating that the soils within the Study Area have not been deep-ripped, and the underlying semi-impermeable layer is likely intact. The Study Area is underlain by intact Northern Claypan, which is an indurated clay layer that significantly reduces the downward percolation of surface water and causes water to perch near the ground surface. The presence of this aquitard can result in the formation of vernal pools and other seasonal wetlands, though wetlands on site are degraded and do not currently support a predominance of vernal pool indicator species.

The Study Area encompasses two separate parcels, a 24-acre parcel and a 78-acre parcel, plus a section of Miller Ditch (along the northern 78-acre parcel border) which will be impacted as part of the NEWS Project (**Section 1.0**). The acreage of the Study Area in total is approximately 105 acres (**Figure 3**). The Central California Irrigation District's (CCID's) Miller Ditch is a constructed feature that receives water from another nearby CCID canal (to the west) and sheet flow from adjacent lands. Miller Ditch generally flows in an easterly direction, connecting to the Newman Wasteway, which then flows northeast into the San Joaquin River, a Traditional Navigable Water.

Most of the 78-acre parcel was historically graded into terraces or gently-angled pastures to facilitate irrigation and cultivation at one time, but the parcel has been fallowed since at least the late 1990s, and now is primarily used for cattle grazing. As with the 24-acre parcel, the surface hydrology of this area was further modified by the addition of summer irrigation. The 78-acre parcel likely once supported a mosaic of perennial grasslands, vernal pools, alkali seasonal wetlands, and potentially a portion of a tributary of the San Joaquin River. These various historic hydromodifications have changed the extent of wetlands, as well as their hydrology and the associated plant communities.



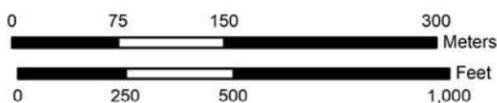
Legend

- Study Area
- Non-Native Annual Grassland
- Native Grass (Beardless wild rye) Population
- Rare Plant (Parry's rough tarplant) Population (greater than ~100 sq ft)
- Rare Plant (Parry's rough tarplant) Population (less than or equal to ~100 sq ft)
- Potential Jurisdictional Features**
- Ditch
- Seasonal Wetland Swale
- Seasonal Wetland
- Emergent Wetland
- ◆ Ground Squirrel or Gopher Burrow
- Tree
- Photo Point

FIGURE 3
Site Habitat Map
 Newman Community Conservation Area
 Merced County, California



1:5,100
 (1 in. = 425 ft. at tabloid layout)



Data Sources: EW, 2016 | USGS, Various Years
 GAP Project, 1998 | USDA, 2009 | VNLC, 2019-2020
 GIS/Cartography by: K. Chinn, July 2020
 Map File: Habitat_445_B-P_2020-0719_BE.mxd

The 24-acre parcel is comprised of severely degraded wetlands, including a large alkali seasonal wetland on Britto soils, as well as upland areas. This parcel has not been intensively cultivated, but has been overgrazed by cattle and received unseasonable irrigation water during the summer via drainage from the adjoining agricultural property.

The Study Area consists of approximately 0.142 acre of emergent wetland, 7.979 acres of seasonal wetlands, 1.396 acres of seasonal wetland swales, and 3.704 acres of ditches. A mosaic of native and non-native plant species was observed in the potential jurisdictional and wetland habitats, with dominant species differing according to the wetland hydrology. The more widespread seasonal wetlands include native Mexican rush (*Juncus mexicanus*) as well as non-native Mediterranean barley (*Hordeum marinum*), Italian rye grass (*Festuca perennis*), rabbitfoot grass (*Polypogon monspeliensis*), curly dock (*Rumex crispus*), and annual blue grass (*Poa annua*). The emergent wetland feature includes a mix of native marsh species and mostly non-native seasonal wetland species. Marsh species include common tule (*Schoenoplectus acutus occidentalis*), broad-leaved cattail (*Typha latifolia*), waterpepper (*Persicaria hydropiper*), and knot grass (*Paspalum distichum*). These are interspersed with the seasonal wetland species indicated above.

The upland grassland habitats on the site were dominated by non-native, weedy species typical of disturbed upland habitats, though localized stands of native grasslands were present. The most commonly observed grasses observed on the site included ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), slender wild oat (*Avena barbata*), foxtail barley (*Hordeum murinum*), and Bermuda grass (*Cynodon dactylon*). There are scattered stands of the native beardless wild rye (*Elymus triticoides*) as well as meadow barley (*Hordeum brachyantherum* ssp. *brachyantherum*). Mexican rush is scattered throughout the uplands as well as the wetland habitats. All of these native graminoids are indicative of high clay content in the soils, and/or the altered hydrology of the site, which is enhanced by irrigation runoff on the eastern parcel. Associated forb species observed were primarily introduced species such as white clover (*Trifolium repens*), bur-clover (*Medicago polymorpha*), bindweed (*Convolvulus arvensis*), summer mustard (*Hirschfeldia incana*), English plantain (*Plantago lanceolata*), white horehound (*Marrubium vulgare*), milk thistle (*Silybum marianum*), black mustard (*Brassica nigra*), and wild geranium (*Geranium dissectum*). For a full inventory of all plant species observed onsite, see **Appendix C**.

5.0 RESULTS AND AVOIDANCE MEASURES

This section provides background information and lists recommended avoidance and/or minimization measures to reduce the potential for the project to impact special-status species and sensitive habitats within the Study Area. Only listed species and/or special-status species with the greatest potential to occur within the Study Area are addressed here. Some species, specifically four large branchiopod species (*Branchinecta* sp.) and California tiger salamander (*Ambystoma californiense*), had potential to occur within the Study Area, but have been ruled out by the results of protocol-level surveys and hydrology data collected in the winter of 2019-2020. These species are not discussed below, but are listed and discussed in **Appendix B**.

5.1 Special-status Species

Special-status animal species targeted and analyzed in this report include those listed by the USFWS and/or California Department of Fish and Wildlife (CDFW) as threatened or endangered, as well as those proposed for listing or that are candidates for listing as threatened or endangered. The listing of “Endangered, Rare, or Threatened” is defined in Section 15380 of the *California Environmental Quality Act (CEQA) Guidelines*. Section 15380(b) states that a species of animal or plant is “endangered” when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. A species is “rare” when either “(A) although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or (B) the species is likely to become endangered within the foreseeable future throughout all or a portion of its range and may be considered ‘threatened’ as that term is used in the Federal Endangered Species Act” (ESA).

Animal species are designated as “Species of Special Concern” or “Fully Protected” by the CDFW. Although these species have no legal status under the California Endangered Species Act (CESA), the CDFW recommends their protection as their populations are generally declining and they could be listed as threatened or endangered (under CESA) in the future. “Fully Protected” species generally may not be taken or possessed at any time. The CDFW may only authorize take for necessary scientific research and may authorize live capture and relocation of “fully protected” birds to protect livestock.

Birds are designated by the USFWS as “Birds of Conservation Concern.” Although these species have no legal status under ESA, the USFWS recommends their protection as their populations are generally declining, and they could be listed as threatened or endangered (under ESA) in the future.

Special-status plants include species that are designated rare, threatened, or endangered as well as candidate species for listing by the USFWS. Special-status plants also include species considered rare or endangered under the conditions of Section 15380 of the CEQA Guidelines, such as those plant species identified by the CNPS as California Rare Plant Rank (CRPR) 1A, 1B, and 2 in the

Inventory of Rare and Endangered Vascular Plants of California. Finally, special-status plants may include other species that are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included as CRPR Lists 3 and 4 in the CNPS Inventory.

For the purposes of this report, ‘sensitive plant communities’ include those designated as such by the CDFW, either in the CNDDDB, the list of California Sensitive Natural Communities (CDFW 2019), or as sensitive alliances classified in the Manual of California Vegetation (MCV) (Sawyer et al. 2009). Alliances included within the MCV that are designated as global or state rank (“G” or “S”) 1-3 are considered “rare or threatened” at the global and/or state level, and are therefore considered sensitive.

In addition, wetland and riparian habitats, regardless of MCV status, are considered sensitive. Wetlands, streams, and permanent and intermittent drainages are subject to the jurisdiction of the U.S. Army Corps of Engineers (ACOE) under Section 404 of the Federal Clean Water Act (CWA). The CDFW also generally has jurisdiction over these resources, together with other aquatic features that provide an existing fish and wildlife resource pursuant to Sections 1602- 1603 of the California Fish and Game Code. The CDFW asserts jurisdiction to the outer edge of vegetation associated with a riparian corridor. The Regional Water Quality Control Board (RWQCB) also generally has jurisdiction over streams and wetlands. Any grading, excavation, or filling of jurisdictional drainage corridors or wetlands would require a Section 404 permit and will require mitigation.

Figure 4 shows the distribution of special-status species documented in CNDDDB in the surrounding area. These and other special-status species known from the project region are listed in **Table 1 and 2 of Appendix B**, along with their regulatory status, habitat requirements, and an evaluation of their potential to occur on or near the Study Area.

5.1.1 Federal or State Listed Wildlife Species

There are four Federal or State listed wildlife species with potential or low potential to occur with the Study Area: Swainson’s Hawk, Tricolored Blackbird, San Joaquin Kit Fox, and giant garter snake. These four species are discussed in detail below.

Swainson’s Hawk (*Buteo swainsoni*) – State Threatened

Swainson’s Hawk (nesting) is listed as State Threatened, as well as a USFWS Bird of Conservation Concern and considered sensitive by the BLM and has potential to nest within the Study Area. Swainson’s Hawks are migratory birds and can be found breeding throughout western North America before migrating south as far as Argentina. Swainson’s Hawk population numbers have dropped within California significantly within the last 100 years, and California listed the species as threatened in 1983 (CDFW 2011). One of the biggest threats they face is habitat loss due to various factors such as conversion of foraging and breeding habitat to agricultural or urban development, climate change and pesticide poisoning (TCLO 2013). Swainson’s Hawks are

known to inhabit open habitats, such as open grassland, open meadows, prairies, and other habitat that allows foraging for prey from above. However, due to extensive habitat loss, they are primarily found within large, open agricultural fields. They will often nest in stands of trees or other vegetation adjacent to the open grassland habitat they use for foraging. Swainson's Hawk was observed foraging directly above the Study Area during a site visit in July 2020.

Potential Project Impacts

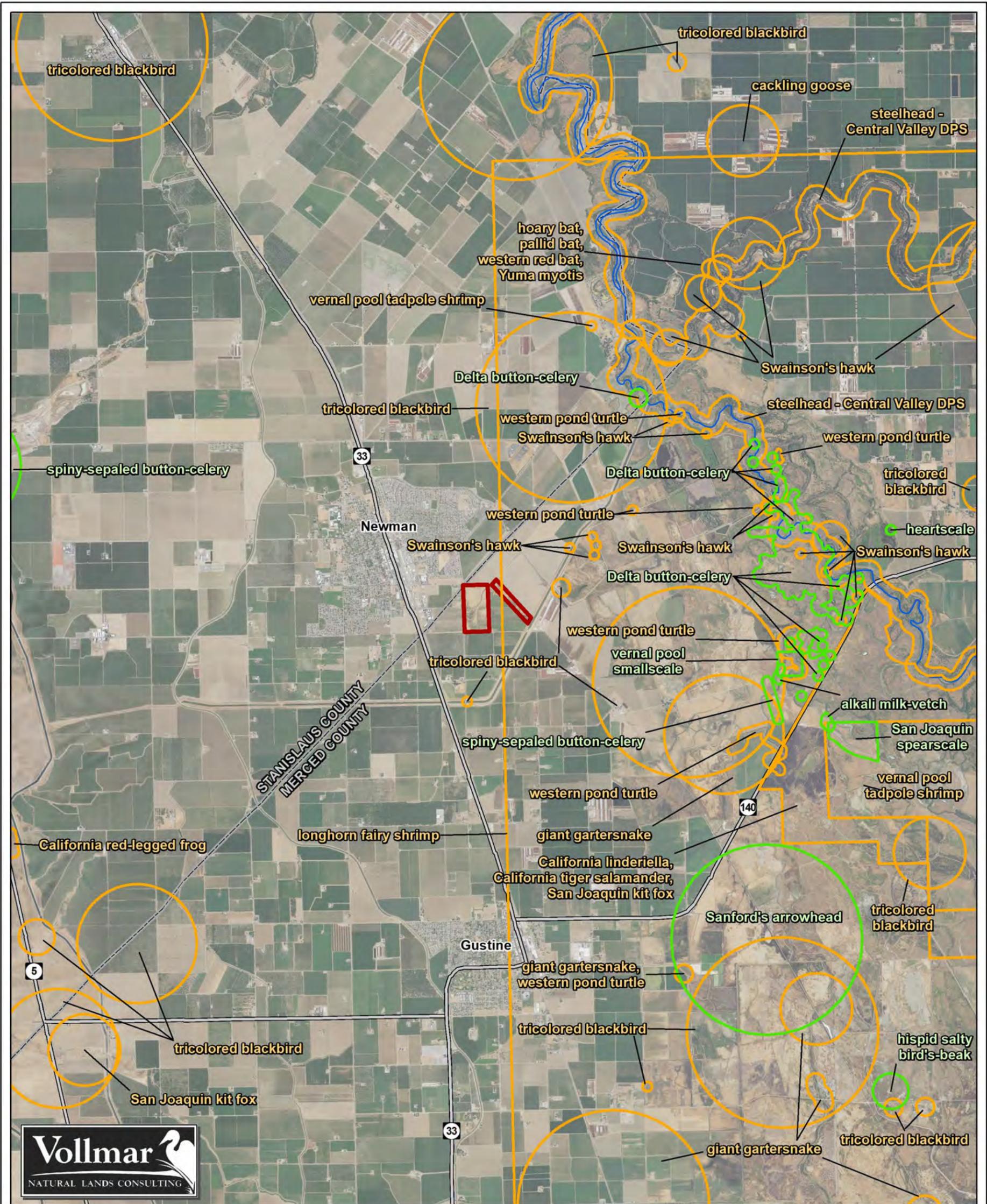
The Study Area provides both foraging and potential nesting habitat for Swainson's Hawk, due to the presence of large, mature trees adjacent to the eastern boundary of the 78-acre parcel, and open grassland with surrounding agricultural fields. Should project activities occur during nesting season and Swainson's Hawks are nesting in the trees adjacent to the project site, the project could result in the abandonment of a nest and possibly eggs or nestlings.

Tricolored Blackbird (*Agelaius tricolor*) – State Threatened, State Species of Special Concern

The Tricolored Blackbird (nesting colony) is listed as State Threatened, CDFW Species of Special Concern, USFWS Bird of Conservation Concern, and as sensitive by the BLM. A member of the blackbird and oriole family, the male Tricolored Blackbird is distinguished from the common red-winged blackbird by its red shoulder patch bordered in white. These birds forage in flocks, mostly on the ground, but occasionally in shrubs and trees. During summer months, they feed on a variety of insects including caterpillars, beetles, and grasshoppers. In fall and winter, they eat the seeds of grasses, weeds, and waste grain (Kaufman 2005). The nesting behavior of the Tricolored Blackbird is highly social. They form the largest colonies of any North American land bird, forming breeding groups of tens of thousands of individuals (Cook 2005). The birds in these colonies pack their nests closely together in dense cattail or bulrush marshes. The density of these colonies is more densely packed than those of the red-winged blackbird, with nests found only one to two feet apart. Breeding takes place from mid-March through July (Kaufman 2005).

Unlike the red-winged blackbird, which is abundant throughout the continent, the Tricolored Blackbird has a very small range in the Pacific states. Tricolored Blackbird populations have seriously declined in recent decades due to habitat destruction. It is speculated that its habit of nesting in dense colonies make the Tricolored Blackbird more susceptible to population decline (Cook 2005).

Tricolored Blackbirds are most often found in large freshwater marshes, especially those which are saturated with cattails and tule (*Schoenoplectus* spp.). They tend to nest in areas with protective, spiny vegetation and high abundances of insect prey, and form the largest nesting colonies of any bird in North America. They prefer areas with adequate foraging area and areas which provide sufficient insect prey within a short radius of the colony (Shuford et al. 2008). The closest known occurrence of the Tricolored Blackbird relative to the Study Area is less than one mile (**Figure 4**).



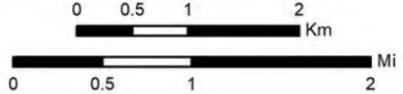
Legend

- ▭ Study Area
- County Boundary
- Special-Status Plant
- Special-Status Animal
- San Joaquin River
- Highway

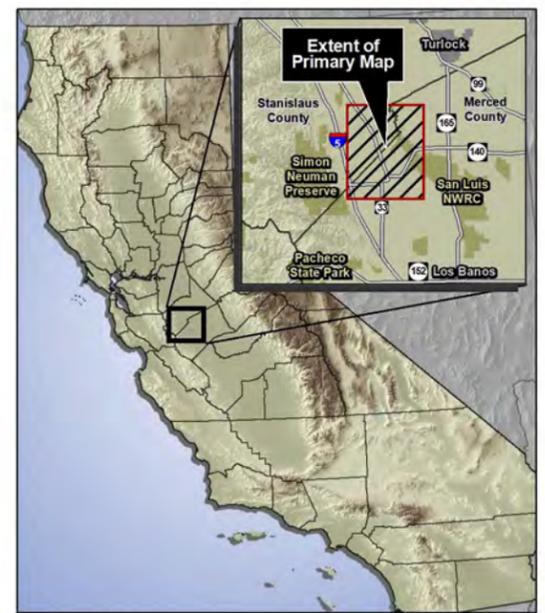
FIGURE 4
Regional Special-Status Species Map
 Newman Community Conservation Area
 Merced County, California



1:65,000
 (1 inch = 1.0 mile at Tabloid Layout)



Data Sources: EW, 2016 | USGS, Various Years
 GAP Project, 1998 | USDA, 2009 | VNLC, 2019
 GIS/Cartography by: K. Chinn, April 2020
 Map File: CNDDDB_BE_445_B-P_2020-0601.mxd



Potential Project Impacts

The Study Area provides potential foraging habitat for Tricolored Blackbird, but does not provide suitable nesting habitat. The emergent wetland feature on site is too small, lacks required density, and is severely degraded, and therefore does not provide potential nesting habitat. Due to the lack of suitable nesting habitat, the project is unlikely to have any significant effects on nesting Tricolored Blackbirds and therefore no mitigation measures are recommended.

San Joaquin kit fox (*Vulpes macrotis mutica*) – Federal Endangered, State Threatened

The San Joaquin kit fox (SJKF) is a member of the Canidae family, and is the smallest fox in North America measuring an average of 20 inches in length and weighing about 5 lbs. They are slight, solitary foxes with long legs and a tan to buffy gray coat. They are easily recognized for their especially long ears, which are proportionately the longest of any canid in North America (Eder 2005).

SJKF prefer habitats of open or low vegetation with loose soils. In the northern portion of their range, they occupy grazed grasslands and, to a lesser extent, valley oak woodlands. In the southern and central portion of the Central Valley, SJKF are found in valley sink scrub, valley saltbrush scrub, upper Sonoran subshrub scrub and annual grassland. SJKF are also found in grazed grasslands including areas adjacent to tilled or fallow fields, and suburban settings (USFWS 1998). SJKF is an important predator of small rodents. Their primary prey species include kangaroo rats, pocket mice, and rabbits. They are also known to feed on reptiles, ground-nesting birds, and insects (Eder 2005).

The SJKF requires underground dens to raise pups, avoid predators (Golightly and Ohmart 1984), regulate temperature, and avoid other adverse environmental conditions. In the northern portion of their range, burrowing mammals, primarily California ground squirrels provide these holes. Dens are usually located on loose-textured soils on slopes of less than 40 degrees (O'Farrell 1980). Natal pupping dens are generally found on slopes of less than 6 degrees (O'Farrell and McCue 1981). Kit foxes breed from late December to March (Egoscue 1956, Morrell 1972, Zoellick et al. 1987). Home range size can vary but generally are 1-2 sq. kilometer in size depending on resource availability. Dispersal distances vary considerably. A six-year study at Elk Hills Petroleum Preserves in California showed that pups dispersed an average distance of 5.0 miles (Scrivner et. al. 1987, USFWS 1998).

Historically, SJKF occurred extensively throughout California's Central Valley and parts of the Salinas and Santa Clara valleys. They currently inhabit some areas of suitable habitat on the San Joaquin Valley floor and in the surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi Mountains, from southern Kern County north to Contra Costa, Alameda, and San Joaquin Counties on the west, and some of the larger scattered islands of natural land on the Valley floor in Kern, Tulare, Kings, Fresno, Madera, and Merced Counties (USFWS 1998). The transformation of the Central Valley from open grasslands to farmland, orchards and residential

areas has greatly impacted SJKF populations as it has become more difficult for them to find food and mates. The extensive use of rat poison has also affected SJKF populations. The federal government has recently made a decision to limit the use of these poisons outdoors (EPA 2015). The closest known occurrence of San Joaquin kit fox relative to the Study Area is approximately 3.6 miles (**Figure 4**).

Potential Project Impacts

Though the Study Area contains grassland and small mammal burrows, no SJKF dens were observed during the field survey. The Study Area is surrounded by agricultural fields and is largely disconnected from suitable habitat. SJKF are unlikely to use the project site for anything other than passing through or hunting. Therefore, project activities are unlikely to impact the SJKF, and no mitigation measures are recommended.

Giant garter snake (*Thamnophis gigas*) – Federal Threatened, State Threatened, State Species of Special Concern

As its name would suggest, the Giant garter snake (GGS) is the largest of the garter snakes. Adults are approximately 36-65 inches in length. It is brown or olive to black in color, with a yellow dorsal stripe and one stripe down each side of its body (Nafis 2020). The historical range for this species is from Kern County to Butte County along the Central Valley; however this range has diminished over time. Currently, the GGS can be found from Glenn County to the Southern portion of San Francisco and from Merced County to Fresno County (Nafis 2020). The GGS is mostly found in marshes, irrigation ditches, drainage systems, and rice fields and slow-moving creeks. This highly aquatic species prefers warm weather (daylight, warm nights) for activity. Its diet consists of fish, frogs and tadpoles as its historical prey has been driven from its range (Nafis 2020).

Giant garter snake is considered federally threatened due to loss of habitat in the San Joaquin Valley and introduction of predatory fish (Nafis 2020). The closest documented occurrence of giant garter snake is approximately 2.1 miles away from the Study Area; however, this documentation is a non-precise location from 1976 and is likely no longer extant (**Figure 4**).

Potential Project Impacts

The drainage ditches containing aquatic habitat along the western and northern portions of the Study Area may provide suitable habitat for GGS. However, GGS has been well studied and there is only one known breeding population in the San Joaquin Valley. There is very low potential for GGS to occur within the Study Area, however, a small portion of Miller Ditch is expected to be impacted during construction. Therefore, avoidance measures for GGS are recommended.

5.1.2 Non-listed Special-Status Wildlife Species

Seven other special-status species have some potential to occur within the Study Area: northwestern pond turtle, western spadefoot, Burrowing Owl, Northern Harrier, Yellow-billed

Magpie, Loggerhead Shrike, and American badger. These species are not federally or state listed as endangered or threatened. However, their designation as special-status species by CDFW or USFWS warrants consideration, and avoidance and mitigation measures are recommended.

Northwestern pond turtle (*Actinemys marmorata*) – State Species of Special Concern

The northwestern pond turtle, the only turtle native to California, is a small turtle which is generally brown, olive brown or dark brown. Its shell is often marked with a network of spots, lines, or dashes of brown or black that radiate from growth centers of shields. The legs and head usually have black spots and can show cream or yellow coloring.

These turtles often bask outside of the water, but quickly re-enter if they are threatened. Habitats include aquatic environments ranging in elevation from sea level to 6,500 ft. They are found in rivers, streams, lakes, ponds wetlands, reservoirs, and brackish estuarine waters (Holland 1994; Jennings and Hayes 1994). They prefer habitats with areas for cover (vegetation, logs) and basking sites (rocks and other substrates) (Holland 1994). Summer droughts and cold winters are survived by aestivating or burying in loose soil or mud.

Northwestern pond turtles are omnivores, with the potential to be opportunistic predators and scavengers (Holland 1985a, 1985b, Bury 1986). Their diet primarily consists of crustaceans, midges, dragonflies, beetles, and caddisflies. They are also known to eat mammal, bird, reptile, amphibian, and fish carrion. They have been observed foraging on willow and alder catkins, and on ditch grass inflorescences (Holland 1991).

Northwestern pond turtles begin to breed between 10 and 14 years of age. Females leave drying creeks from May to July to oviposit in sunny upland habitats, including grazed pastures. Clutch size ranges from one to 13 eggs, and incubation lasts 80-100 days. Nest predation rates are high and complete failure of nests is common.

The northwestern pond turtle is declining in most of its range. It is almost extinct in the San Joaquin Valley and has seen extensive habitat loss, in part due to predation as well as competition from introduced animals, including exotic pet turtles that have been released into the wild (Zeiner and Laudenslayer 1990). The nearest documented occurrence of northwestern pond turtle is approximately two miles from the Study Area (**Figure 4**).

Potential Project Impacts

The irrigation ditches bordering the western and northern boundaries of the Study Area provide marginal habitat for pond turtles. However, the species is highly mobile and may disperse through dry areas when moving between larger pools or ponds. Therefore, it is possible that individual turtles may be present during construction activities, and could be harmed if not avoided or mitigated.

Western spadefoot (*Spea hammondi*) – State Species of Special Concern

The Western Spadefoot (WS) is a Spadefoot Toad belonging to the family Pelobatidae. WS is a medium-sized toad varying in color from greenish, cream or gray-brown above. They often have four irregular, light-colored stripes on the back along with dark blotches. Their eyes are wide-set with no cranial boss between them. Hind legs each have a glossy black, wedge-shaped spade (Stebbins 2012).

WS inhabit a variety of different habitats including washes, floodplains of rivers, alluvial fans, playas, alkali flats. They are primarily a species of the lowlands, but they also appear in valley and foothill grasslands, open chaparral, and pine-oak woodlands. WS prefers areas of open vegetation and short grasses, where soil is sandy or gravelly (Stebbins 2012). Their diet consists of a variety of invertebrates, including adult beetles, larval and adult moths, crickets, flies, ants, spiders, and earthworms. Tadpoles feed on planktonic organisms, algae, small invertebrates, dead aquatic larvae of amphibians, and may exhibit cannibalism (Bragg 1964).

WS require rain pools which do not contain bullfrogs, fish, or crayfish for breeding. Breeding sites include vernal pools and other temporary rain pools, cattle tanks, and pools of intermittent streams. Typically the pools are turbid with little or no cover. Adults remain in underground burrows for most of the year, and move to breeding pools after heavy rains, typically in February and March. Interestingly, WS is an opportunistic breeder, meaning it is physiologically capable of breeding at any time if conditions are favorable (Ervin and Cass 2007). WS breeding usually occurs 1-2 days after heavy rains. Development is rapid with egg to transformation occurring in 8-16 days (Stebbins 2012). Temporary breeding pools must last for at least 30 days for successful transformation of larvae. Recently metamorphosed individuals seek refuge in the immediate vicinities of breeding pools for up to several days after transformation. They have been witnessed hiding in drying mud cracks and beneath boards and other surface objects (Weintraub 1980).

Dry periods are spent in self-made burrows or those made by gophers, ground squirrels or kangaroo rats. WS are nocturnal, with the majority of their activity occurring at night and during spring and summer rains. To burrow, WS push soil aside with their spades as the hind feet move alternately in a circular fashion (Stebbins 2012).

WS is endemic to California and northern Baja California. It ranges from northern California south throughout the Central Valley and its foothills. Its range then extends west into the southern California coastal area and into northwest Baja. Much of the WS habitat has been lost in the Central Valley due to urban and agricultural development on land that previously supported seasonal rain pools. An estimated 80% of its former habitat in southern California has been lost due to development (Stebbins 2003). The closest known occurrence western spadefoot relative to the Study Area is approximately 6.7 miles (**Figure 4**).

Potential Project Impacts

The majority of the seasonal wetlands onsite do not provide breeding habitat, as they were not observed to pond during the regular surveys conducted in 2019-2020. However, some wetland features did pond for periods of up to 4 weeks, and could provide marginal breeding habitat for western spadefoot. The adjacent upland grasslands may provide suitable refuge habitat during the dry season. Due to the far distance to a known occurrence (over 6 miles) and the fact that the Study Area is surrounded by cultivated fields and development, it is unlikely that a western spadefoot would be present onsite. However, it is possible due to the presence of burrows and breeding habitat. If not avoided or mitigated, individual WS may be harmed by project activities.

Burrowing Owl (*Athene cunicularia*) – State Species of Special Concern

The Burrowing Owl is a state species of special concern. There are 22 subspecies of Burrowing Owl, one of which, the Western Burrowing, is found in the southern half of California year-round. The species as a whole occupies areas in Mexico, the Caribbean, Central America, and the North-East, central and southern portions of South America (Urban Bird Foundation 2008).

Burrowing Owls live in habitats characterized by their open range, short grasses, and plethora of burrowing mammals whose burrows the owls use as nest (TCLO 2015). These habitats include grasslands, deserts, farmland, golf courses and rangeland (Urban Bird Foundation 2008). The species mainly feeds on small mammals and insects and will occasionally hunt an amphibian or reptile. The biggest threats to Burrowing Owls is the destruction of their habitat caused by ground squirrel and prairie dog population management and urban development (ibid). The closest documented occurrence of Burrowing Owl is 11.7 miles from the Study Area.

Potential Project Impacts

The grassland habitat with numerous California ground squirrel burrow complexes within the Study Area provide suitable foraging, breeding and refugial habitat for burrowing owls. If project activities commence during burrowing owl breeding season, nesting owls could be harmed.

Northern Harrier (*Circus hudsonius*) – State Species of Special Concern

The Northern Harrier is a state species of special concern. It inhabits a multitude of habitats, from annual grassland to alpine meadows, and breeds in the Sierra Nevada and Central Valley. Suitable habitat for the species includes meadows, open rangelands, grasslands, fresh and saltwater emergent wetlands, and desert sinks. Northern Harriers are mostly observed in hummocky or flat, open areas of dense grasses, shrubs, and edges for foraging, nesting and cover. The California population of Northern Harrier has decreased in the last few decades but observed as locally abundant in areas where suitable habitat exists free of disturbance. Decline of Northern Harriers is majorly due to destruction of native grassland, moist meadows, wetlands, and burning and plowing of nesting areas (Polite 1988). The closest known occurrence of Northern Harrier in proximity to the Study Area is approximately 13.5 miles (**Figure 4**).

Potential Project Impacts

The Study Area provides suitable nesting and foraging habitat for Northern Harriers. The 78-acre parcel in particular contains open areas of tall, dense grasses that provide foraging, cover and nesting habitat. If project activities commence during nesting raptor season (typically January 15 to September 15), individual nesting Northern Harriers could be harmed.

Yellow-billed Magpie (*Pica nuttalli*) – USFWS Bird of Conservation Concern

The Yellow-Billed Magpie inhabits the Central Valley yearlong, as well as the coastal mountain ranges between Santa Barbara County and San Francisco Bay (Green 1988). They also breed locally on the coast of Monterey County (Green 1988). The species inhabits various habitats, including valley foothill hardwood, valley foothill riparian, foothill hardwood-conifer, cropland, pasture, orchard vineyard, and urban habitats (Green 1988). Cover is provided by riparian woodland, oak savannah and croplands and pastures with trees (Green 1988).

Potential Project Impacts

The Study Area provides suitable nesting habitat for the Yellow-billed Magpie due to the presence of pasture and grassland habitat in and in the vicinity of the Study Area, with adjacent tall trees. If project activities commence during nesting bird season (typically February through September), individual nesting magpies could be harmed.

Loggerhead Shrike (*Lanius ludovicianus*) – State Species of Special Concern

The Loggerhead Shrike is a resident and winter visitor throughout the foothills and lowlands of California (Granholm 1988). They inhabit open habitats with fences, posts, trees, scattered shrubs, utility lines, or other such perches (Granholm 1988). The Loggerhead Shrike is most common in valley foothill hardwood-conifer, open-canopied valley foothill hardwood, pinyon-juniper, valley foothill riparian, desert riparian, and Joshua tree habitats (Granholm 1988). They rarely occur in heavily urbanized areas, but are often observed in open cropland (Granholm 1988). The Loggerhead Shrike was observed directly adjacent to the Study Area during the March site visit.

Potential Project Impacts

The Study Area provides suitable nesting habitat for Loggerhead Shrike due to the grasslands and cultivated fields within and surrounding site. If project activities commence during nesting bird season (typically February through September), individual nesting Loggerhead Shrike could be harmed.

American badger (*Taxidea taxus*) – State Species of Special Concern

A member of the weasel family, Mustelidae, the American badger is a heavy bodied, short-legged, grayish mammal that features a white medial stripe from its nose over the top of the head and down its back. The species occurs in a variety of open, arid habitats throughout much of western North America, but are most commonly associated with grasslands, savannas, and open scrub along low to moderate slopes (Stephenson and Calcarone 1999). In California, the species is an uncommon,

permanent resident throughout most of the state, with the exception of the North Coast area (Grinnell et al. 1937). Badgers require friable soils for digging burrows and their presence can often be determined by the presence of burrows with large openings. A Badger den may approach 30 ft. in length and have a 1 ft. diameter. A sizeable pile of excavated earth can often be found to one side of the burrow entrance.

Badgers are carnivorous and feed primarily on small rodents but also consume reptiles, insects, birds and bird eggs, and carrion (Ahlborn 2005). Their stout bodies, powerful forelimbs, and long curved claws allow badgers to capture their prey in burrows. When not actively foraging, individuals tend to retreat to their den/burrow. Individuals, especially males, are known to occupy relatively large home ranges, from approximately 480 to nearly 3,000 acres (Quinn 2008). The species is considered ferocious and has relatively few predators, though coyotes and golden eagles are known to occasionally prey upon them. Badgers are solitary except during breeding the between July and August. Interestingly, embryos do not begin to grow until December or February. In March, females will give birth to 1-5 babies in underground nests lined with grass.

American Badgers are listed as a species of special concern by the CDFW due to population decline. The primary threat to the American badger is habitat conversion, as much of its habitat has been lost to agriculture and urban development. Other threats include heavy traffic volume (which leads to road kills), indiscriminate trapping and poisoning, and a reduction in prey base as a result of rodent control (Ahlborn 2005). The species has experienced significant population declines over the past century, particularly in southern California (Williams 1986). The nearest documented occurrence of American badger in proximity to the Study Area is approximately 4.9 miles away (**Figure 4**).

Potential Project Impacts

The Study Area contains marginal suitable habitat for American Badger, as it is surrounded by cultivated fields and no dens or signs of the species were observed during the field survey. Therefore, project activities are unlikely to affect the species, and no mitigation measures are recommended.

5.1.3 Migratory and Nesting Birds

The Migratory Bird Treaty Act (16 U.S.C. 704) and the California Fish and Game Code (Section 3503) prohibits the take of migratory birds, or disturbance to the active nests of most native birds. Several migratory birds have potential to occur within the regional vicinity of the project area. These include the Common Yellowthroat (*Geothlypis trichas sinuosa*), Nuttall's Woodpecker (*Picoides nuttallii*), Song Sparrow (*Melospiza melodia*), Spotted Towhee (*Pipilo maculatus clementae*), Tricolored Blackbird, Long-billed Curlew, and Yellow-billed Magpie (*Pica nuttalli*).

Multiple bird species were observed on or adjacent to the Study Area during the field visit, including Red-tailed Hawk (*Buteo jamaicensis*), Red-winged Blackbird (*Agelaius phoeniceus*)

Wilson's Snipe (*Gallinago delicata*), Mourning Dove (*Zenaida macroura*), European Starling (*Sturnus vulgaris*), Killdeer (*Charadrius vociferous*), Loggerhead Shrike (*Lanius ludovicianus*), Western Meadowlark (*Sturnella neglecta*), Cattle Egret (*Bubulcus ibis*), and Turkey Vulture (*Cathartes aura*).

Additionally, due to the presence of large trees and signs of small mammal activity, raptors are likely to use the site for foraging and nesting. Nesting raptors (and most other nesting birds) are protected under the California Fish and Game Code 3503.

Potential Project Impacts

If project activities commence during nesting bird season, individual nesting birds could be harmed.

5.1.4 Special-Status Plant Species and Sensitive Plant Communities

The alkali seasonal wetland within the Study Area has potential to support several special-status plants known from the region (**Figure 4**). There is suitable habitat for six species with special-status designation, though none are state or federally listed species (**Appendix B, Table 2**). CNPS protocol-level plant surveys commenced in spring 2020 within the Study Area and finished in July 2020. The species potentially present within the Study Area are:

- Crownscale (*Atriplex coronata* var. *coronata*) – CRPR 4.2;
- Heartscale (*Atriplex cordulata* var. *cordulata*) – CRPR 1B.2;
- Vernal pool smallscale (*Atriplex persistens*) – CRPR 1B.2;
- Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) – CRPR 4.2;
- Lesser saltscale (*Atriplex minuscula*) – CRPR 1B.1; and
- San Joaquin spearscale (*Extriplex joaquinana*) – CRPR 1B.2.

During protocol-level rare plant surveys conducted in spring and early summer 2020, Parry's rough tarplant was detected in both the 78-acre and 24-acre parcels (see **Figure 3**). For more details regarding the plant species habitat descriptions and potential to occur in the Study Area, see **Table 2** in **Appendix B**.

The Study Area encompasses 0.142 acres of Coastal and Valley Freshwater Marsh, a CDFW Sensitive Natural Community. This sensitive natural community is ranked as G3 S2.1, meaning it is globally vulnerable, and imperiled within the state. This habitat is present in the northeast corner of the 78-acre parcel. It is within an anthropogenic channel, so it is inherently in a somewhat disturbed condition. Despite its condition, it is a sensitive natural community and potentially jurisdictional wetland, so project impacts to the feature should be avoided. If impacts are proposed to this habitat feature, avoidance and mitigation measures are recommended, as described below in Measure 14, Section 5.2 Wetlands or Waters of the U.S.

5.2 Wetlands or Waters of the U.S.

VNLC ecologists conducted a preliminary wetland delineation of the Study Area on October 14, 2019. VNLC ecologists visited the Study Area a second time on March 10, 2020 in order to obtain additional vegetation and habitat information during the growing season. Additional rounds of surveys were conducted on December 17, 28, and 30, 2020 following a request for additional information from ACOE. The delineation identified a total of approximately 13.221 acres of features within the Study Area, of which approximately 5.923 acres are potential ACOE jurisdictional Waters, approximately 4.654 acres are potential CDFW jurisdictional features, and approximately 13.221 acres are potential RWQCB jurisdictional. As of February 2021, the delineation has not yet been verified by the ACOE. Representative photographs of site habitats and features are provided in **Appendix A**.

5.3 Avoidance and Minimization Measures

Table 2-15 presents a suite of AMMs—originally laid out in the NCCA Master Plan (City of Newman 2020, Appendix A to this Initial Study)—that will be implemented to reduce the potential for adverse effects on sensitive habitats, water bodies, and the special-status plants and wildlife that may be present on the NCCA parcels. The AMMs will apply to initial construction of the NCCA projects and will be incorporated into the construction documents for each of the NCCA projects to ensure that requirements and limitations are clear and binding for contractor staff. The AMMs will also apply to installation of the water service extension to serve the NEWS project and Newman Nature Park.

Additionally, the AMMs will continue to be in effect for future maintenance or repair activities that have the potential to disturb habitat or otherwise affect special-status species, and as individual O&M plans are developed for the each of the NCCA projects, they will incorporate the AMMs, with additional detail as appropriate to facilitate straightforward and effective implementation on a project-specific basis. New AMMs may also need to be developed as the details of project O&M are further developed.

The AMMs presented below are based on current (2020) habitat conditions on the NCCA parcels. The NEWS, wetland, and MDTW projects would modify habitat on the parcels substantially, and conditions may continue to evolve as the projects become increasingly established over time. In addition, O&M activities and the introduction of recreational and educational access would increase human presence and activity at the NCCA site over the long term. As a result, there may be changes in the types of AMMs that are needed—some AMMs may become less relevant, some may need to be amplified, and new measures may become appropriate. With this in mind, AMM-1 provides for routine re-evaluation to verify site conditions and support review and—if needed—updates to the AMMs to enable adaptive management throughout the lifespan of the NCCA projects.

Additionally, it should be noted that the AMMs are intended to dovetail with the requirements of resource agency permits authorizing the NCCA projects. In particular, in the years immediately

following completion of each project, permit terms and conditions may require more frequent and intensive monitoring of restored and created habitat. In that case, the permit terms and conditions for each project will temporarily supersede the NCCA-wide AMMs within that project’s footprint; elsewhere at the NCCA, the AMMs will continue to apply in their most current form.

Table 1. Avoidance and Minimization Measures for NCCA Project Construction, Operations, and Maintenance

Measure	Requirements
<p>AMM-1. Routine Reassessment & AMM Updates</p>	<p>At the completion of each NCCA project, GIS-based habitat mapping for the Plan Area parcels¹ will be updated to document changes in habitat distribution as a result of the project.</p> <p>Over the long term, the Plan Area parcels will be reevaluated for habitat conditions and potential special-status species use every other year. The evaluation will be conducted by a qualified biologist/ecologist who has experience with wetland and upland habitats in the west-central San Joaquin Valley, will cover both Plan Area parcels in their entirety, and will include, at a minimum, the following activities.</p> <ul style="list-style-type: none"> • Assessment of habitat distribution to determine whether the most recent habitat mapping is still accurately representative of conditions on the Plan Area parcels • California Rapid Assessment Method (CRAM) assessment of wetland health and performance <p>Results will be documented in an NCCA Habitat Assessment Report for City records. The Habitat Assessment Report will also identify the date of the next routine re-survey, enabling survey frequency to be adjusted (increased or decreased) if appropriate based on the rate and nature of change in conditions on the Plan Area parcels. In addition, depending on the extent and nature of changes in Plan Area conditions and the City’s planned activities during the next few years, the Survey Report may recommend more detailed reassessment, potentially including re-mapping of habitat, updated delineation of state and federally jurisdictional habitat (wetlands and waters of the United States and State of California), and/or focused surveys for special-status species.</p> <p>In addition to documenting current Plan Area Conditions, the Habitat Assessment Report will include an evaluation of the AMMs in place at the time of the reassessment, and will identify any needed changes to the AMMs, potentially including modification or discontinuation of existing AMMs and/or establishment of new AMMs. Changes to AMMs will only be instituted in the interests of better preserving and protecting habitat values on the Plan Area parcels, in balance with appropriate O&M and recreational/educational access.</p> <p>The City will maintain Habitat Assessment Reports and other relevant documentation such as habitat and jurisdictional delineation mapping and special-status species sighting reports (see AMM-6) on file for ongoing reference in managing the NCCA.</p>
<p>AMM-2. Appropriate Long-Term Public Access</p>	<p>All public access, including access roadways opened for public trail use, will incorporate appropriate measures to prevent accidental incursions—and discourage intentional access—into sensitive habitat. Measures will be designed for aesthetic consistency with their natural surroundings, such that they foster a positive and welcoming user experience while protecting sensitive resources to the extent</p>

¹ Throughout Table 2-15, *Plan Area parcels* refers to the 78-acre and 24-acre parcels that together make up the NCCA site.

Measure	Requirements
AMM-3. Worker Awareness Training	<p>possible. Measures may include carefully selected trail routing as well as split-rail or other suitable fencing, strategically located plantings, and the use of elevated boardwalks. Signage will also be used to inform the public of sensitive resources and foster appreciation for the need to protect them. All signage will be bilingual in English and Spanish to reflect the City’s diverse population. Wildlife-proof trash and recycling receptacles will be provided at regular intervals along all trails to discourage littering.</p> <p>All construction personnel will be required to attend environmental awareness training before beginning work. All O&M staff and any future interns, student employees, and volunteers will also receive environmental awareness training as part of their routine City training. Training will be provided bilingually in English and Spanish if appropriate.</p> <p>Training will be delivered by a qualified biologist/ecologist and will provide information on the sensitive habitats within the Plan Area (based on the most recent surveys of the Plan Area per AMM-1), the special-status species that are known or potentially present, and measures required to protect water quality and sensitive habitats under AMM-4.</p> <p>For each special-status species, training will include information on listing status, habitat preferences, distinguishing physical characteristics, causes of decline, and measures required to protect the species within the Plan Area. Training will include a hard copy handout that summarizes information presented in the training and includes photographs of habitat resources and species to facilitate identification in the field by construction and O&M personnel.</p>
AMM-4. Wetland & Water Quality Protection	<p>Best management practices will be implemented for all ground-disturbing activities to prevent siltation and contaminated runoff to wetlands and water bodies within and adjacent to the Plan Area. During construction, this may take the form of a SWPPP prepared and implemented by appropriately qualified/certified personnel. For O&M activities that involve ground disturbance, similar measures will be implemented by City staff. BMPs will also be implemented for all O&M activities that require handling of fuels, lubricants, paints, solvents, and other substances with the potential to degrade water quality.</p> <p>BMPs will include, but will not necessarily be limited to, the following.</p> <ul style="list-style-type: none"> • Before work begins, a qualified biologist/ecologist will delineate sensitive areas to be avoided, using pin flags, temporary construction fencing, or another appropriate low-impact medium. No entry (personnel, equipment, or materials) will be permitted into delineated avoidance areas • If excavation or ground disturbance is necessary, runoff control measures such as straw wattles, filter rolls, filter fences, or silt fences will be installed to contain disturbed soil materials. Runoff control will be in place prior to groundbreaking. If straw wattles are used, they will consist of certified sterile, weed-free rice straw or similar, suitable for use in sensitive habitat. If filter fences or mesh are used, they will consist of materials, and employ a design, approved by DFW and USFWS as safe for amphibians and reptiles • If ground disturbance occurs in a vegetated area, the disturbed area will be reseeded immediately following the completion of repairs, using a certified weed-free native species seed mix appropriate to the location and approved by a qualified biologist/ecologist

Measure	Requirements
	<ul style="list-style-type: none"> • Excavated materials will be stockpiled away from sensitive habitat, in areas that are relatively level, and relatively free of vegetation. Stockpiles will be located as far as reasonably feasible from the limits of sensitive habitat, and runoff control measures as described above will be used to prevent delivery of sediment to wetlands and ditches. If wattles are used, they will consist of certified sterile, weed-free materials, as identified above. Any excavated materials not reused on site will be promptly removed to appropriate permanent disposal locations following the completion of work • All diesel- and gasoline-powered construction equipment and tools, including generator units, will be inspected for leaks and damage prior to mobilization • Fueling, lubrication, and maintenance of vehicles and equipment will be conducted as far as reasonably feasible from wetlands and waterbodies, and will take place offsite if possible. Equipment staging will also be located as far as reasonably feasible from wetlands and water bodies. If onsite fueling, maintenance, or repairs are required, containment measures such as drip pans will be required • To the maximum extent possible, materials staging will also be restricted to paved, surfaced, or upland areas away from wetlands and watercourses • During all work, appropriate types and quantities of materials will be maintained onsite to contain any spills or releases of materials and prevent them from entering sensitive habitat and jurisdictional waters • In the event of a spill, appropriate spill response procedures will be initiated as soon as the incident is discovered. If contractor staff are involved, the contractor will be required to notify City staff as soon as feasible, and in no case more than 24 hours after the occurrence; a designated City contact will be specified in the project construction documents for this purpose. If there is any potential for the spill to enter jurisdictional waters, the City will notify the RWQCB • Food waste will be appropriately contained and disposed, and trash generated during construction and O&M activities will be promptly and properly removed from the site
<p>AMM-5. Special-Status Plant Protection</p>	<p>Populations of CRPR 1B and CRPR 2 taxa will be delineated on GIS-based maps for future reference, based on the results of protocol-level peak blooming period surveys.²</p> <p>Prior to the start of construction and O&M work in the vicinity of delineated populations of CRPR 1B and CRPR 2 taxa, a qualified biologist/ecologist will define the current extent of the population in the field using pin flags, temporary construction fencing, or another appropriate low-impact medium. Work will avoid delineated CRPR 1B and 2 populations to the extent feasible.</p> <p>If a population of CRPR 1B or CRPR 2 plants cannot be entirely avoided, the following additional measures will apply.</p> <ol style="list-style-type: none"> (1) If possible, work will be scheduled for timeframes when the special-status taxa occurring in the work area are senescent and/or after seed has set (2) If an individual or population must be removed, one of two options may be employed, followed by monitoring, and, if needed, further corrective action to ensure that no net loss of the species occurs

² Initial mapping of extant populations was completed in 2020.

Measure	Requirements
	<ul style="list-style-type: none"> i. Seeds from the affected species may be collected from existing onsite populations or from another population within the Bennett Valley – San Joaquin River watershed and distributed in the work area following completion of work, or, if the work area cannot be reseeded, in another appropriate location within the Plan Area ii. A nursery with experience growing special-status plants of the western San Joaquin Valley region may be contracted to grow seedlings of the species from locally native seeds (collected from the work area or from another population in the Bennett Valley – San Joaquin River watershed). Seedlings may be planted in the work area following completion of work, or, if this is not possible, may be planted in another appropriate location within the Plan Area <p>Note that seeds derived from plants in the Bennett Valley – San Joaquin River watershed may be available from local nurseries, and local nurseries may also be able to propagate seeds from adults grown from locally native collected seeds. In this case, seeds do not need to be collected from the work area.</p> <p>Prior to impacts and reseeded or replanting, a qualified biologist/ecologist will develop a monitoring plan for the revegetated area. The monitoring plan will include at least the following components.</p> <ul style="list-style-type: none"> • Interim and final success criteria for the revegetated area. The goal will be to match pre-disturbance population levels in the Plan Area over the long term. Due to normal variations in population from year to year, average population data for annual taxa can be calculated from several years of data collected. • Procedures for annual monitoring for a minimum of 3 years or until final success criteria are met • Corrective actions (additional seeding or planting) in the event interim success criteria are not met <p>The City will ensure that the monitoring plan is implemented by qualified personnel, and that any corrective action identified as necessary is properly carried out.</p>
<p>AMM-6. Special-Status Wildlife Protection (General)</p>	<p>In the event of a known or potential sighting of special-status wildlife in or near any construction or O&M work area, the following requirements will apply.</p> <ul style="list-style-type: none"> • Personnel will avoid the animal and will immediately notify designated City staff and the City’s on-call biologist, who will advise them on how to proceed; if warranted (depending on the species involved), the biologist will consult with resource agency (DFW and/or USFWS) staff for guidance • The biologist will respond onsite to relocate the animal or assist in implementing other protective measures, guided by agency input • If the sighting is confirmed by the biologist, the species and location will be reported to DFW for inclusion in the California Natural Diversity Database (CNDDDB). The biologist will be responsible for making the report <p>The biologist will also provide a brief memorandum documenting the sighting and any follow-up actions, including CNDDDB documentation, for City records.</p>
<p>AMM-7. Western Spadefoot Protection</p>	<p>To the extent feasible, construction and O&M activities will be conducted during the dry season (May – October), or will avoid entry into and disturbance of ponded features.</p> <p>If work within or in proximity to ponded features occurs during the rainy season, a qualified biologist will delineate areas to be avoided to prevent impacts on breeding</p>

Measure	Requirements
AMM-8. Giant Garter Snake Protection	<p>special-status amphibians, using pin flags, temporary construction fencing, or another appropriate low-impact medium. No entry (personnel, equipment, or materials) will be permitted into delineated avoidance areas.</p> <p>If work would impact areas with burrows, a qualified biologist will evaluate the burrows to determine whether they are suitable for use by western spadefoot, and will scope any suitable burrows. If any western spadefoot individuals are found within burrows to be impacted, they will be safely excavated from the burrow by hand or small excavator, either by the biologist or under biologist oversight, and will be relocated to a suitable burrow location outside the disturbance area and far enough away that they would not be expected to return.</p> <p>To the extent feasible, all construction and O&M activities will avoid impacting or working within 200 feet of the drainage ditches in the Study Area. Once the NEWS and MDTW projects become operational, the same precautions will apply to created water bodies. Appropriate silt fencing, flagging, and/or other measures will be employed to protect the drainage ditches and other aquatic habitat from direct and indirect impacts, as described in AMM-4.</p> <p>If work within 200 feet of suitable habitat for giant garter snake is necessary (e.g., for NEWS and MDTW project O&M), the following additional measures will be required.</p> <ol style="list-style-type: none"> (1) If possible, work within 200 feet of suitable habitat will be conducted between May 1 and October 1, when the species is more active and mortality is less likely (2) At all times of year, prior to work within 200 feet of suitable habitat, before work begins, a qualified biologist will conduct a pre-construction survey of the work area (including access and staging) for giant garter snake. If the species is present, the biologist will notify the City and work will be delayed until the biologist can consult USFWS regarding next steps. Work will not proceed until USFWS has recommended appropriate next steps and these have been implemented. Once work has begun, if activity is suspended for 2 weeks or more, the survey—and, if needed, follow-up—will be repeated
AMM-9. Northwestern Pond Turtle Protection	<p>Prior to the start of construction or O&M activities, a qualified biologist will conduct a pedestrian preconstruction survey for northwestern pond turtle. The survey will be conducted no more than 24 hours prior to start of work, and will include walking the work area limits and interior and investigating all areas that could be used by the species. If northwestern pond turtle individuals are found, the biologist will relocate them to suitable habitat outside the disturbance area and far enough away that they would not be expected to return.</p>
AMM-10. Nesting Bird Protection	<p>To the extent feasible, construction will be scheduled outside the February 1 – September 15 nesting season. O&M activities reasonably expected to generate substantial sustained disturbance above Plan Area baseline levels and O&M activities that would involve ground disturbance or vegetation removal or trimming will also be scheduled outside the nesting period if possible.</p> <p>If the types of activities identified above would commence during the nesting season, a qualified biologist will conduct a preconstruction survey for nesting birds. The survey will be conducted within 2 weeks of the start of work, and will cover the entire work footprint, including access and staging, plus a 500-foot-wide buffer. If active nests are found within the survey area, a no-disturbance zone will be established around the nest for the duration of the nesting season, or until the biologist determines that the young have fledged and left the nest, or that the nest has been</p>

Measure	Requirements
	<p>abandoned. No entry into the no-disturbance zone will be permitted. The no-disturbance zone will be delineated in the field by or under the supervision of the biologist, using temporary construction fencing or another suitable low-impact medium. The width of the no-disturbance zone will be determined by the biologist, based on</p> <ul style="list-style-type: none"> • the location of the nest and the amount of vegetative and other screening between the nest and areas where work will take place • noise and human disturbance levels at the site at the time of the survey and the noise and disturbance expected during the work • the sensitivity of the species involved and behaviors of the nesting birds, and, if appropriate, • other site- or species-specific factors <p>If special-status species are involved, the biologist will consult with the appropriate resource agency(ies) (DFW and/or USFWS) in determining the width of the no-disturbance zone.</p> <p>If work during the nesting season is suspended for more than 1 week and then recommences, an additional survey will be conducted before work is reinitiated, and the same no-disturbance zone requirements will apply in the event active nests are found.</p>
<p>AMM-11. Western Burrowing Owl Protection</p>	<p>If construction will take place during the western burrowing owl breeding season (February 1 – August 31), protocol-level preconstruction surveys will be conducted for this species. O&M activities reasonably expected to generate substantial sustained disturbance above Plan Area baseline levels and O&M activities that would involve ground disturbance will also be subject to this requirement.</p> <p>Surveys will be conducted by a qualified biologist and will follow the methodology described in DFW’s current Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 2012, or future reports that supersede the 2012 version). Four surveys will be conducted within 2 hours of sunrise or sunset, with the final survey occurring 24 hours prior to the start of construction activities. If active nest burrows are found, the no-disturbance zone requirements described in AMM-10 will apply. If work during the burrowing owl nesting season is suspended for more than 1 week and then recommences, an additional survey will be conducted before work is reinitiated, and the same no-disturbance zone requirements will apply in the event active nests are found.</p>

Source: City of Newman 2020

6.0 REFERENCES

- Ahlborn, G. 2005. American Badger (*Taxidea taxus*). California Wildlife Habitat Relationships System, California Department of Fish and Game, California Interagency Wildlife Task Group. Available online (as of 07/2014) at: <http://www.dfg.ca.gov/whdab/cwhr/A043.html>.
- Bragg, A. N. 1964. Further study of predation and cannibalism in spadefoot tadpoles. *Herpetologica* 20:17-24.
- Bury, R. B. 1986. Feeding ecology of the turtle *Clemmys marmorata*. *Journal of Herpetology* 20:515–521.
- California Department of Fish and Wildlife (CDFW). 2011. Swainson’s Hawks in California. Available at <https://www.wildlife.ca.gov/Conservation/Birds/Swainson-Hawks>
- California Department of Fish and Wildlife (CDFW). 2019. California Natural Communities List. Available at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline>.
- California Department of Fish and Wildlife, Natural Diversity Database. 2019. Special Animals List. Periodic publication. 67 pp
- California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website <http://www.rareplants.cnps.org> [accessed 18 February 2020].
- California Natural Diversity Database (CNDDDB). 2020. California Department of Fish and Wildlife’s CNDDDB Records within project vicinity. March 2020 database update.
- Cook, L.F. and Toft, C.A. 2005. Dynamics of extinction: population decline in the colonially nesting Tricolored Blackbird *Agelaius tricolor*. *Bird Conservation International*, 15(01), pp.73-88.
- East Contra Costa County. 2006. Vernal Pool Tadpole Shrimp. Available at: https://www.contracosta.ca.gov/depart/cd/water/HCP/archive/final-hcp/pdfs/apps/AppD/17a_tadpoleshrimp_9-28-06_profile.pdf
- Eder, Tamara. Mammals of California. Lone Pine Publishing International Inc., 2005.
- Egoscue, H.J. 1956. Preliminary studies of the kit fox in Utah. *J. Mammal.* 37:351-357.
- EPA. "Canceling Some D-CON Mouse and Rat Control Products." United States Environmental Protection Agency. 2 Apr. 2015. Web. 1 Oct. 2015.
- Ervin, E. L., Cass, T. L. 2007. *Spea hammondi* western spadefoot reproductive pattern. *Herpetological Review* 38(2): 196-197

- Fuller, Pam and Nico, Leo. 2020. *Hysteroecarpus traskii* Gibbons, 1854. U.S. Geological Survey, Nonindigenous Aquatic Species Database, Gainesville, FL. Website <https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=668>
- Golightly, R.T., and R.D. Ohmart. 1984. Water Economy of Two Desert Canids: Coyote and Kit Fox. *J. Mamm.* 65:51-58
- Granholt, S. 1988. "Life History Account for Loggerhead Shrike." California's Wildlife I-III (1988). California Wildlife Habitat Relationships. California Department of Fish and Wildlife. 5 Nov. 2019.
- Harris, J. "Life History Account for Pallid Bat." California's Wildlife I-III (1988): n. pg. California Wildlife Habitat Relationships. California Department of Fish and Wildlife. Web. 3 Mar. 2017.
- Harris, J. 1988. "Life History Account for Western Red Bat." California's Wildlife I-III (1988). California Wildlife Habitat Relationships. California Department of Fish and Wildlife. 5 Nov. 2019.
- Harris, J. 1988. "Life History Account for Yuma Myotis." California's Wildlife I-III (1988). California Wildlife Habitat Relationships. California Department of Fish and Wildlife. 5 Nov. 2019.
- Harvey, T. and Ahlborn, G. "Life History Account for San Joaquin Pocket Mouse." California's Wildlife I-III (1988). California Wildlife Habitat Relationships. California Department of Fish and Wildlife. 5 Nov. 2019.
- Holland, D. C . 1985b. Northwestern pond turtle (*Clemmys marmorata*): feeding. *Herpetological Review* 16(4): 112–113.
- Holland, D. C. 1985a. An ecological and quantitative study of the northwestern pond turtle (*Clemmys marmorata*) in San Luis Obispo County, California. M.S. thesis, California State University, Fresno.
- Holland, D. C. 1994. The northwestern pond turtle: habitat and history. Portland, OR: U.S. Department of Energy, Bonneville Power Administration.
- Jennings, M. R., and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. Rancho Cordova, CA: California Department of Fish and Game.
- Kaufman, K. 2005. *Kaufman field guide to birds of North America*. Houghton Mifflin Harcourt.
- Kaufman, Kenn. 1996. *Lives of North American Birds*. Library of Congress Cataloging-in-Publication Data.

- Laabs, D.M., S.g. Orloff, and M.L. Allaback (2002). Pond and Stream-Breeding Amphibians pp. 191-230 in Vollmar, J. E., Ed. Wildlife and Rare Plant Ecology of Eastern Merced's Vernal Pool Grasslands.
- Morell, S.H. 1972. Life history of the San Joaquin kit fox. CDFG. 58:162-174.
- Nafis, G. (2020) California Herps - A Guide to the Amphibians and Reptiles of California. Available at: <http://www.californiaherps.com/> (accessed 22 August 2016).
- National Wildlife Federation (NWF). 2007. Fair Funding For Wildlife: Investing In Our Commitment To Save America's Endangered Wildlife. Website <https://www.nwf.org/~media/PDFs/Wildlife/LeastBellsVireo.ashx>
- O'Farrell, T.P. 1980. Elk Hills Endangered and Threatened Species Program, Phase 1 Progress Summary. U.S. Dept. Energy Tropical Rep. No. EGG 1183-2403, Santa Barbara Operations. U.S. Department of Energy, Goleta, CA. 19 pp.
- Polite, C. "Life History Account for Northern Harrier." California's Wildlife I-III (1988). California Wildlife Habitat Relationships. California Department of Fish and Wildlife. 5 Nov. 2019.
- Quinn, J.H. 2008. The ecology of the American badger (*Taxidea taxus*) in California: assessing conservation status on multiple scales. Ph.D. Dissertation. University of California, Davis, Davis, California. 200 pp.
- Sawyer, John O., Todd Keeler-Wolf, and Julie M. Evans. 2009. A Manual of California Vegetation, Second Edition.
- Scrivner, J.H., T.P. O'Farrell, and T.T. Kato. 1987a. Dispersal of San Joaquin kit foxes, *Vulpes macrotis mutica*, on Naval Petroleum Reserve #1, Kern County, California. Rep. No. EGG 10282-2190, EG&G Energy Measurements, Goleta, CA, 32pp.
- Shuford, W.D., and Gardali, T., editors. 2008. Tricolored Blackbird Account from: California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game.
- Stebbins, R. C., and Samuel M McGinnis 2012. Field Guide to Amphibians and Reptiles of California, University of California Press.
- Stebbins, Robert C. 2003. A Field Guide to Western Reptiles and Amphibians. 3rd Edition. Houghton Mifflin Company.
- The Cornell Lab of Ornithology (TCLO). 2013. Swainson's Hawk Life History. All About Birds. Available at https://www.allaboutbirds.org/guide/Swainsons_Hawk/lifehistory

- The Cornell Lab of Ornithology (TCLO). 2015. Burrowing Owl Life History. All About Birds. Available at https://www.allaboutbirds.org/guide/Burrowing_Owl/lifehistory
- United States Fish and Wildlife Service (USFWS). 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, Oregon.
- USFWS. 2017. Longhorn Fairy Shrimp. Sacramento Fish & Wildlife Office. Website https://www.fws.gov/sacramento/es_species/Accounts/Invertebrates/longhorn_fairy_shrimp/
- USFWS. 2017. Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 69pp.
- USFWS. 2017. Vernal Pool Fairy Shrimp. Oregon Fish & Wildlife Office. Website <https://www.fws.gov/oregonfwo/articles.cfm?id=149489448>
- United States Fish and Wildlife Service (USFWS). 2020. USFWS Environmental Conservation Online System. Information for Planning and Consultation. Website <https://ecos.fws.gov/ipac/location/index> [accessed 31 January 2019].
- Urban Bird Foundation, Burrowing Owl Conservation Network. 2008. Burrowing Owl Facts. Available at http://burrowingowlconservation.org/burrowing_owl_facts/
- Weber, Katie. "Antrozous Pallidus (pallid bat)." Animal Diversity Web. N.p., 2009. Web. 03 Mar. 2017.
- Weintraub, J. D. 1980. Selection of daytime retreats by recently metamorphosed *Scaphiopus multiplicatus*. J. Herpetol. 14:83-84.
- Williams, D.F. 1986. Mammalian Species of Concern in California. California Department of Fish and Game Report 86-1. Sacramento, CA: California Department of Fish and Game.
- Zeiner, D. C., Laudenslayer Jr., W. F., Mayer, K. E., and White, Marshall. (1990). California's Wildlife California Department of Fish and Game. (Vol II). Sacramento, CA
- Zeiner, D. C., W. F. Laudenslayer, Jr., and K. E. Meyer (1988). California's wildlife. Volume I: amphibians and reptiles. May 2, 1988. California Department of Fish and Game. Sacramento, CA.
- Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California.
- Zoellick, B.W., T.P. O'Farrell, and T.T. Kato. 1987. Movements and home range of San Joaquin kit foxes on the Naval Petroleum Reserves, Kern County, California. Rep. No. EGG 10282-2184, EG&G Energy Measurements, Goleta, CA. 38 pp.

APPENDIX A
REPRESENTATIVE SITE PHOTOGRAPHS



Photo 1. Overview of 24-acre Parcel, facing south (3/26/20)



Photo 2. Overview of 78-acre Parcel, facing north (3/26/20)



Photo 3. Burrows in 78-acre Parcel (3/26/20)



Photo 4. Ditch in 78-acre Parcel, facing south (3/26/20)



Photo 5. Large trees adjacent to 78-acre Parcel, facing south (3/26/20)



Photo 6. Burrows in 24-acre Parcel (3/26/20)



Photo 7. Ditch in 78-acre Parcel, facing south (3/26/20)



Photo 8. Ditch in 24-acre Parcel (3/26/20)



Photo 9. Emergent wetland in 78-acre Parcel, facing west (3/26/20)



Photo 10. Seasonal wetland swale in 78-acre Parcel, facing southwest (3/26/20)



Photo 11. Seasonal wetland in 78-acre Parcel, facing south (3/26/20)



Photo 12. Seasonal wetland in 24-acre Parcel, facing east (3/26/20)



Photo 13. Seasonal wetland in 24-acre Parcel, facing northwest (3/26/20)



Photo 14. Miller Ditch north of 78-acre Parcel, facing east (3/26/20)

APPENDIX B
SPECIAL-STATUS SPECIES IN PROJECT REGION

TABLE 1. Special-Status Animal Species Documented within the Vicinity of the Study Area

Species highlighted in gray have potential or low potential to occur onsite.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Amphibians			
California tiger salamander <i>Ambystoma californiense</i>	FT, ST	Grasslands and low foothills, with vernal pools for breeding.	Not expected. Although the grassland and burrows onsite could provide suitable refugial habitat, the site is surrounded by unsuitable habitat (agricultural fields) and there is no breeding habitat onsite as the wetlands do not pond long enough. The nearest documented occurrence is 3.6 miles away which is farther than CTS are known to travel overland.
Foothill yellow-legged frog <i>Rana boylei</i>	SC, SSC	Rocky streams in a variety of habitats.	Not expected. Site does not contain rocky streams. Nearest documented occurrence is 12.8 miles away.
California red-legged frog <i>Rana draytonii</i>	FT, SSC	Quiet pools of freshwater streams, and occasionally ponds.	Not expected. Site does not contain streams. Nearest documented occurrence is 6.43 miles away.
Red-bellied newt <i>Taricha rivularis</i>	SSC	During dry season, underground within root channels, primarily in redwood forest but also can be found in mixed conifer and other kinds of woodland habitats. Wet season migrates to streams for breeding and larval development.	Not expected. Site does not contain forest habitat or streams.
Western spadefoot <i>Spea hammondi</i>	SSC	Grasslands with shallow temporary pools are optimal habitats for the western spadefoot. Adults remain in underground burrows during most of the year.	Low potential. Select seasonal wetlands onsite provide marginal breeding habitat. Adjacent uplands composed of annual grasses could provide suitable refuge during dry season. Nearest documented occurrence is 6.7 miles away.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Birds			
Golden Eagle <i>Aquila chrysaetos</i>	FP	Open and semi-open country with native vegetation, primarily in mountains, canyonlands, cliffs, and bluffs. Nest on cliffs and steep areas in grassland, chaparral, shrubland, and forest.	Not expected. Site does not support suitable habitat. Nearest documented occurrence is over 20 miles away.
Swainson's Hawk <i>Buteo swainsoni</i>	ST (nesting)	Forages in open grasslands and prairies. Nests adjacent to riparian habitats.	Potential. Large trees suitable for nesting habitat were observed just outside the boundary of the Study Area. The species is known to occur in the region on a seasonal basis (spring through summer for breeding) and may forage onsite. Nearest documented occurrence is 1 mile away.
Northern Harrier <i>Circus hudsonius</i>	SSC (nesting)	Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded areas. Mostly found in flat, or hummocky, open areas of tall, dense grasses, moist or dry shrubs, and edges for nesting, cover, and feeding.	Low potential. Site supports marginal quality nesting habitat. Grasslands and freshwater emergent wetlands and open areas of dense grasses provide foraging habitat. Nearest documented occurrence is 13.5 miles away.
Bald Eagle <i>Haliaeetus leucocephalus</i>	SE, FP	Requires large, old-growth trees or snags in remote, mixed stands near water.	Not expected. Site does not support suitable nesting or foraging habitat.
Least Bittern <i>Ixobrychus exilis</i>	SSC	Uses dense, emergent vegetation for cover and nesting, and feeds in such vegetation, as well as in small openings. Often feeds along the edge of emergent vegetation, on the open-water side.	Not expected. Dense stands of vegetation needed for cover and nesting not observed at the Study Area.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Yellow-billed Magpie <i>Pica nuttalli</i>	BCC (nesting)	Prefers open oak and riparian woodland, and farm and rangeland with tall trees in the vicinity of grassland, pasture, and cropland.	Potential. Grassland and adjacent trees provide suitable habitat.
Tricolored Blackbird <i>Agelaius tricolor</i>	SC, SSC (nesting)	Forages in a variety of habitats including pastures, agricultural fields, rice fields, and feedlots; nests in freshwater marshes with tules or cattails, or in other dense thickets of willow, thistle, blackberry, or wild rose in close proximity to open water; occurs year-round in this area.	Low potential. Site does not provide suitable nesting habitat; there is suitable foraging habitat present within and surrounding the Study Area. Nearest documented occurrence is 0.6 miles away.
Loggerhead Shrike <i>Lanius ludovicianus</i>	SSC (nesting)	Common resident and winter visitor in lowlands and foothills of California. Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Nests in thorny vegetation, trees, shrubs, brush piles or tumbleweeds.	Potential. Open habitat with trees and fencing around the Study Area provides foraging and nesting habitat. A Loggerhead Shrike was documented in the Study Area during the March 2020 site visit.
Burrowing Owl <i>Athene cunicularia</i>	SSC	Open, treeless areas with low, sparse vegetation in grasslands, deserts, pastures, agricultural fields, and more. Associated with mammal burrows, where they also nest.	Potential. Grassland habitat with small mammal burrows, including ground squirrel complexes, were observed onsite and could support foraging and breeding activities. Nearest documented occurrence is 11.7 miles away.
Least Bell's Vireo <i>Vireo bellii pusillus</i>	FE, SE	Nests and forages almost exclusively in riparian woodlands.	Not expected. Riparian woodland habitat needed for nesting and foraging not provided at Study Area. Nearest documented occurrence is almost 20 miles away.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Mollusks and Crustaceans			
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE	Large, cool-water vernal pools with moderately turbid water.	Not expected. Site does not support vernal pool habitat, and protocol wet and dry season large branchiopod surveys were conducted in the seasonal wetlands on site. No cysts or individuals were observed (see Appendix D).
Longhorn fairy shrimp <i>Branchinecta longiantenna</i>	FE	Inhabits clear to rather turbid vernal pools. These include clear-water depressions in sandstone outcroppings near Tracy, grass-bottomed pools in Merced County and claypan pools around Soda Lake in San Luis Obispo County.	Not expected. Seasonally ponded water including long-lived puddles could potentially provide suitable habitat for this species. However, protocol wet and dry season large branchiopod surveys were conducted in the seasonal wetlands on site. No cysts or individuals were observed (see Appendix D).
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT	Occur primarily in vernal pools, seasonal wetlands, and stagnant ditches that fill with water during fall and winter rains and dry up in spring and summer.	Not expected. Seasonally ponded water including long-lived puddles could potentially provide suitable habitat for this species. However, protocol wet and dry season large branchiopod surveys were conducted in the seasonal wetlands on site. No cysts or individuals were observed (see Appendix D).
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE	Habitats where vernal pool tadpole shrimps have been observed range in size from small, clear, well-vegetated vernal pools to highly turbid, alkali scald pools to large winter lakes	Not expected. Seasonally ponded water including long-lived puddles could potentially provide suitable habitat for this species. However, protocol wet and dry season large branchiopod surveys were conducted in the seasonal wetlands on site. No cysts or individuals were observed (see Appendix D).

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Fish			
Riffle sculpin <i>Cottus gulosus</i>	SSC	Live in permanent, cool, headwater streams where riffles and rocky substrates predominate	Not expected. No streams in Study Area.
Sacramento hitch <i>Lavinia exilicauda exilicauda</i>	SSC	Inhabit warm, lowland, waters including clear streams, turbid sloughs, lakes and reservoirs.	Not expected. No streams or rivers in Study Area.
San Joaquin roach <i>Lavinia symmetricus ssp. 1</i>	SSC	Capable of adapting to varying habitats from coastal streams to mountain foothill streams.	Not expected. No streams in Study Area.
Hardhead <i>Mylopharodon conocephalus</i>	SSC	Often found at low to mid-elevations in relatively undisturbed habitats of larger streams.	Not expected. No streams in Study Area.
Delta smelt <i>Hypomesus transpacificus</i>	FT, SE	Endemic to the northeastern San Francisco Estuary and Delta.	Not expected. Study Area is not connected to the Delta or northeastern San Francisco Estuary.
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	SSC	Occupy estuaries.	Not expected. Study Area does not include estuarine habitat.
Kern brook lamprey <i>Entosphenus hubbsi</i>	SSC	Occupy silty backwaters of large rivers in foothill regions.	Not expected. No streams or rivers in Study Area. Drainage ditches onsite do not provide suitable habitat.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Steelhead - Central Valley DPS <i>Oncorhynchus mykiss irideus</i> pop. 11	FT, SSC	Adults spawn in freshwater streams with clear, well-oxygenated, cool water and clean gravel substrate. Also require instream cover and streamside vegetation.	Not expected. USFWS has critical habitat identified in San Joaquin River, but no riverine features in the Study Area. Nearest documented occurrence is 2.92 miles away.
Chinook salmon - Central Valley fall / late fall-run ESU <i>Oncorhynchus tshawytscha</i> pop. 13	SSC	Streams, rivers, estuaries, ocean.	Not expected. No streams or rivers in Study Area.
Insects			
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT	Found nearly always on or close to the host plant, red or blue elderberry. Usually occurs in elderberry stands along rivers and streams.	Not expected. No elderberry shrubs observed in the Study Area.
Mammals			
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	FE, ST	Annual grassland and scrub and subshrub land. Live in dens in friable soils or enlarge smaller holes created by other animals.	Low potential. No dens have been observed onsite, and soils are clay, not friable. However, suitable grassland foraging habitat is present throughout the site and prey base consisting of ground squirrels and other small mammals is present. Nearest documented occurrence is 3.6 miles away.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Fresno kangaroo rat <i>Dipodomys nitratoides exilis</i>	FE	Endemic to the bottomlands of the San Joaquin Valley. Occurs in alkali grasslands and saltbrush scrub.	Not expected. No suitable saltbrush scrub observed, but grassland habitat is present. No recorded occurrences in CNDDDB within 5 miles of the Study Area, and it is unlikely to occur onsite based on lack of suitable habitat and highly restricted range. Nearest documented occurrence is almost 60 miles away.
San Joaquin Pocket Mouse <i>Perognathus inornatus</i>	BLM:S	Occurs in dry, open grasslands or scrub areas on fine-textured soils between 350 and 600 m (1,100 and 2,000 ft) in the Central and Salinas valleys.	Not expected. Study area provides marginal habitat, but is outside elevation range.
American badger <i>Taxidea taxus</i>	SSC	Prefers open areas and may also frequent brushlands with little groundcover. When inactive, occupies underground burrow.	Low potential. No dens were observed during field survey, and nearest documented occurrence is 6.8 miles away.
Pallid bat <i>Antrozous pallidus</i>	SSC	Forages in a variety of habitats. Roosts in rocky outcrops, buildings, and hollow trees.	Not expected. No suitable roost sites were observed in the Study Area. Nearest documented occurrence is 4.88 miles away.
Western red bat <i>Lasiurus blossevillii</i>	SSC	Roosts in forest or woodland habitats, especially near riparian areas.	Not expected. No suitable roost sites were observed in the Study Area. Nearest documented occurrence is 4.88 miles away.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Yuma myotis <i>Myotis yumanensis</i>	BLM:S	Found in a wide variety of upland and lowland habitats, including riparian, desert scrub, moist woodlands, and forests, usually near open water. Warm-season roosts are in caves, cliff crevices, bridges, buildings, tunnels, and abandoned cliff swallow nests and cavities and nooks in large live trees near water.	Not expected. No suitable roost sites were observed in the Study Area. Nearest documented occurrence is 4.88 miles away.
Reptiles			
San Joaquin coachwhip <i>Masticophis flagellum ruddocki</i>	SSC	Occurs in open, dry, treeless areas with little or no cover, including valley grassland and saltbush scrub. Takes refuge in rodent burrows, under shaded vegetation, and under surface objects.	Not expected. Grassland habitat onsite is marginal and nearest documented occurrence is almost 20 miles away.
Northwestern pond turtle <i>Actinemys marmorata</i>	SSC	Permanent and intermittent waters of rivers, creeks, small lakes and ponds, marshes, unlined irrigation canals, and reservoirs.	Low potential. Irrigation ditches in Study Area provide marginal habitat, and nearest documented occurrence is 2 miles away.
Giant garter snake <i>Thamnophis gigas</i>	FT, ST, SSC	Found primarily in marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields, and occasionally in slow-moving creeks. Prefers locations with vegetation close to the water for basking.	Low potential. Could occur in large perimeter irrigation ditches with aquatic habitat that are connected to Newman Wasteway and ultimately San Joaquin corridor. Nearest documented occurrence is 2 miles away, but is a record from 1976 at a non-precise location. GGS have been well studied and there is only one known breeding population in the San Joaquin Valley.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Blunt-nosed leopard lizard <i>Gambelia silus</i>	FE	Occurs in semiarid grasslands, alkali flats and washes.	Not expected. Site does not contain semiarid grassland habitat, and is outside of known range of the species. Nearest documented occurrence is over 20 miles away.
Coast horned lizard <i>Phrynosoma blainvillii</i>	SSC	Inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains. Found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Often found in lowlands along sandy washes with scattered shrubs and along dirt roads, and near ant hills.	Not expected. The Study Area provides isolated habitat with unsuitable soils (clay, not friable). The nearest documented occurrence is over 20 miles away.

Notes:

FT – Federal Threatened; FE – Federal Endangered; ST – State Threatened; SE – State Endangered; SC – State Candidate; SSC – CDFW Species of Special Concern; FP – CDFW Fully Protected; BLM: S – Bureau of Land Management: Sensitive; USFWS: BCC – United States Fish and Wildlife Service: Birds of Conservation Concern

APPENDIX C
OBSERVED PLANT SPECIES INVENTORY

APPENDIX C. Observed Plant Species Inventory within the Newman Community Conservation Area, 2019-2020. Compiled by Vollmar Natural Lands Consulting.

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank ¹	Wetland Indicator Status ²
Araceae (Arum Family)	<i>Lemna gibba</i>	Swollen Duckweed	Native	N/A	OBL
Asteraceae (Aster Family)	<i>Carduus pycnocephalus</i> ssp. <i>pycnocephalus</i>	Italian Thistle	Naturalized	Moderate	NL
Asteraceae (Aster Family)	<i>Carduus tenuiflorus</i>	Slenderflower Thistle	Naturalized	Limited	NL
Asteraceae (Aster Family)	<i>Centromadia parry</i> ssp. <i>rudis</i>	Parry's Rough Tarplant	Native	N/A	FACW
Asteraceae (Aster Family)	<i>Centromadia pungens</i>	Common Tarweed	Native	N/A	FAC
Asteraceae (Aster Family)	<i>Cirsium vulgare</i>	Bull Thistle	Naturalized	Moderate	FACU
Asteraceae (Aster Family)	<i>Erigeron canadensis</i>	Horseweed	Native	N/A	FACU
Asteraceae (Aster Family)	<i>Helminthotheca echioides</i>	Bristly Ox-Tongue	Naturalized	Limited	FAC
Asteraceae (Aster Family)	<i>Heterotheca grandiflora</i>	Telegraph Weed	Native	N/A	NL
Asteraceae (Aster Family)	<i>Hypochaeris glabra</i>	Smooth Cat's-Ear	Naturalized	Limited	NL
Asteraceae (Aster Family)	<i>Lactuca serriola</i>	Prickly Lettuce	Naturalized	N/A	FACU
Asteraceae (Aster Family)	<i>Pseudognaphalium beneolens</i>	Cudweed	Native	N/A	NL
Asteraceae (Aster Family)	<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed	Naturalized	N/A	FAC
Asteraceae (Aster Family)	<i>Senecio vulgaris</i>	Common Groundsel	Naturalized	N/A	FACU
Asteraceae (Aster Family)	<i>Silybum marianum</i>	Milk Thistle	Naturalized	Limited	NL
Asteraceae (Aster Family)	<i>Sonchus asper</i> ssp. <i>asper</i>	Prickly Sow Thistle	Naturalized	N/A	FAC

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank ¹	Wetland Indicator Status ²
Asteraceae (Aster Family)	<i>Sonchus oleraceus</i>	Common Sow Thistle	Naturalized	N/A	UPL
Asteraceae (Aster Family)	<i>Xanthium spinosum</i>	Spiny Cocklebur	Naturalized	N/A	FACU
Boraginaceae (Borage Family)	<i>Amsinckia intermedia</i>	Common Fiddleneck	Native	N/A	NL
Boraginaceae (Borage Family)	<i>Amsinckia menziesii</i>	Small-Flowered Fiddleneck	Native	N/A	NL
Boraginaceae (Borage Family)	<i>Phacelia lemmonii</i>	Lemmon's Phacelia	Native	N/A	FACU
Brassicaceae (Mustard Family)	<i>Brassica nigra</i>	Black Mustard	Naturalized	Moderate	NL
Brassicaceae (Mustard Family)	<i>Capsella bursa-pastoris</i>	Shepherd's Purse	Naturalized	N/A	FACU
Brassicaceae (Mustard Family)	<i>Lepidium dictyotum</i>	Alkali Pepperweed	Native	N/A	FAC
Brassicaceae (Mustard Family)	<i>Lepidium didymum</i>	Lesser Swine Cress	Naturalized	N/A	NL
Brassicaceae (Mustard Family)	<i>Lepidium draba</i>	Heart-Podded Hoary Cress	Naturalized	Moderate	NL
Brassicaceae (Mustard Family)	<i>Lepidium latifolium</i>	Perennial Pepperweed	Naturalized	High	FAC
Brassicaceae (Mustard Family)	<i>Rorippa palustris</i> ssp. <i>palustris</i>	Bog Yellowcress	Native	N/A	OBL
Brassicaceae (Mustard Family)	<i>Sisymbrium altissimum</i>	Tumble Mustard	Naturalized	N/A	FACU
Caryophyllaceae (Pink Family)	<i>Cerastium glomeratum</i>	Sticky Mouse-Ear Chickweed	Naturalized	N/A	UPL
Caryophyllaceae (Pink Family)	<i>Spergularia marina</i>	Saltmarsh Sand-Spurrey	Native	N/A	OBL
Caryophyllaceae (Pink Family)	<i>Spergularia rubra</i>	Red Sand-Spurrey	Naturalized	N/A	FAC
Chenopodiaceae (Goosefoot Family)	<i>Atriplex prostrata</i>	Fat-Hen	Naturalized	N/A	FACW
Chenopodiaceae (Goosefoot Family)	<i>Atriplex suberecta</i>	Sprawling Saltbush	Naturalized	N/A	FACU

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank ¹	Wetland Indicator Status ²
Convolvulaceae (Morning-glory Family)	<i>Convolvulus arvensis</i>	Bindweed	Naturalized	N/A	NL
Convolvulaceae (Morning-glory Family)	<i>Cressa truxillensis</i>	Alkali Weed	Native	N/A	FACW
Crassulaceae (Stonecrop Family)	<i>Crassula aquatica</i>	Water Pygmyweed	Native	N/A	OBL
Cyperaceae (Sedge Family)	<i>Cyperus eragrostis</i>	Tall Flatsedge	Native	N/A	FACW
Cyperaceae (Sedge Family)	<i>Schoenoplectus acutus</i> var. <i>occidentalis</i>	Common Tule	Native	N/A	OBL
Fabaceae (Pea Family)	<i>Lotus corniculatus</i>	Bird's-Foot Trefoil	Naturalized	N/A	FAC
Fabaceae (Pea Family)	<i>Medicago polymorpha</i>	California Burclover	Naturalized	Limited	FACU
Fabaceae (Pea Family)	<i>Medicago sativa</i>	Alfalfa	Naturalized	N/A	UPL
Fabaceae (Pea Family)	<i>Melilotus indicus</i>	Sourclover	Naturalized	N/A	FACU
Fabaceae (Pea Family)	<i>Trifolium depauperatum</i> var. <i>depauperatum</i>	Dwarf Sack Clover	Native	N/A	FAC
Fabaceae (Pea Family)	<i>Trifolium dubium</i>	Little Hop Clover	Naturalized	N/A	UPL
Fabaceae (Pea Family)	<i>Trifolium repens</i>	White Clover	Naturalized	N/A	FACU
Fabaceae (Pea Family)	<i>Trifolium subterraneum</i>	Subterranean Clover	Naturalized	N/A	NL
Fabaceae (Pea Family)	<i>Vicia sativa</i> ssp. <i>nigra</i>	Narrow-Leaved Vetch	Naturalized	N/A	FACU
Frankeniaceae (Frankenia Family)	<i>Frankenia salina</i>	Alkali Heath	Native	N/A	FACW
Geraniaceae (Geranium Family)	<i>Erodium cicutarium</i>	Redstem Filaree	Naturalized	Limited	NL
Geraniaceae (Geranium Family)	<i>Erodium moschatum</i>	Greenstem Filaree	Naturalized	N/A	NL
Geraniaceae (Geranium Family)	<i>Geranium dissectum</i>	Cutleaf Geranium	Naturalized	Limited	NL

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank ¹	Wetland Indicator Status ²
Juncaceae (Rush Family)	<i>Juncus bufonius</i> var. <i>bufonius</i>	Toad Rush	Native	N/A	FACW
Juncaceae (Rush Family)	<i>Juncus bufonius</i> var. <i>occidentalis</i>	Western Toad Rush	Native	N/A	FACW
Juncaceae (Rush Family)	<i>Juncus mexicanus</i>	Mexican Rush	Native	N/A	FACW
Juncaginaceae (Arrow-grass Family)	<i>Triglochin scilloides</i>	Flowering-Quillwort	Native	N/A	OBL
Lamiaceae (Mint Family)	<i>Marrubium vulgare</i>	Horehound	Naturalized	Limited	FACU
Lythraceae (Loosestrife Family)	<i>Lythrum hyssopifolia</i>	Hyssop Loosestrife	Naturalized	Limited	OBL
Malvaceae (Mallow Family)	<i>Malva neglecta</i>	Common Mallow	Naturalized	N/A	NL
Malvaceae (Mallow Family)	<i>Malva parviflora</i>	Cheeseweed	Naturalized	N/A	NL
Marsileaceae (Water-clover Family)	<i>Marsilea vestita</i> ssp. <i>vestita</i>	Hairy Water Clover	Native	N/A	OBL
Onagraceae (Evening Primrose Family)	<i>Epilobium brachycarpum</i>	Tall Annual Willowherb	Native	N/A	NL
Plantaginaceae (Plantain Family)	<i>Plantago lanceolata</i>	English Plantain	Naturalized	Limited	FAC
Plantaginaceae (Plantain Family)	<i>Veronica peregrina</i> ssp. <i>xalapensis</i>	Purslane Speedwell	Native	N/A	FAC
Plantaginaceae (Plantain Family)	<i>Veronica persica</i>	Persian Speedwell	Naturalized	N/A	NL
Poaceae (Grass Family)	<i>Alopecurus saccatus</i>	Pacific Foxtail	Native	N/A	OBL
Poaceae (Grass Family)	<i>Avena fatua</i>	Wild Oat	Naturalized	Moderate	NL
Poaceae (Grass Family)	<i>Bromus diandrus</i>	Ripgut Grass	Naturalized	Moderate	NL
Poaceae (Grass Family)	<i>Bromus hordeaceus</i>	Soft Chess	Naturalized	Limited	FACU

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank ¹	Wetland Indicator Status ²
Poaceae (Grass Family)	<i>Cynodon dactylon</i>	Bermuda Grass	Naturalized	Moderate	FACU
Poaceae (Grass Family)	<i>Distichlis spicata</i>	Salt Grass	Native	N/A	FAC
Poaceae (Grass Family)	<i>Elymus triticoides</i>	Beardless Wild Rye	Native	N/A	NL
Poaceae (Grass Family)	<i>Festuca bromoides</i>	Brome Fescue	Naturalized	N/A	NL
Poaceae (Grass Family)	<i>Festuca myuros</i>	Rattail Sixweeks Grass	Naturalized	Moderate	NL
Poaceae (Grass Family)	<i>Festuca perennis</i>	Rye Grass	Naturalized	Moderate	FAC
Poaceae (Grass Family)	<i>Festuca pratensis</i>	Meadow Fescue	Naturalized	N/A	NL
Poaceae (Grass Family)	<i>Glyceria declinata</i>	Low Manna Grass	Naturalized	Moderate	FACW
Poaceae (Grass Family)	<i>Hordeum brachyantherum</i> ssp. <i>brachyantherum</i>	Northern Barley	Native	N/A	FACW
Poaceae (Grass Family)	<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean Barley	Naturalized	Moderate	FAC
Poaceae (Grass Family)	<i>Hordeum murinum</i> ssp. <i>leporinum</i>	Hare Barley	Naturalized	Moderate	FACU
Poaceae (Grass Family)	<i>Leptochloa fusca</i> ssp. <i>uninervia</i>	Mexican Sprangletop	Native	N/A	NL
Poaceae (Grass Family)	<i>Parapholis incurva</i>	Curved Sicklegrass	Naturalized	N/A	FACU
Poaceae (Grass Family)	<i>Paspalum distichum</i>	Knot Grass	Native	N/A	FACW
Poaceae (Grass Family)	<i>Phalaris paradoxa</i>	Hood Canary Grass	Naturalized	N/A	FAC
Poaceae (Grass Family)	<i>Poa annua</i>	Annual Blue Grass	Naturalized	N/A	FAC
Poaceae (Grass Family)	<i>Polypogon monspeliensis</i>	Annual Beard Grass	Naturalized	Limited	FACW
Polygonaceae (Buckwheat Family)	<i>Persicaria punctata</i>	Dotted Smartweed	Native	N/A	OBL

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank ¹	Wetland Indicator Status ²
Polygonaceae (Buckwheat Family)	<i>Polygonum aviculare</i> ssp. <i>aviculare</i>	Knot Weed	Naturalized	N/A	FAC
Polygonaceae (Buckwheat Family)	<i>Polygonum ramosissimum</i> ssp. <i>ramosissimum</i>	Yellow Knotweed	Native	N/A	FAC
Polygonaceae (Buckwheat Family)	<i>Rumex conglomeratus</i>	Clustered Dock	Naturalized	N/A	FACW
Polygonaceae (Buckwheat Family)	<i>Rumex crispus</i>	Curly Dock	Naturalized	Limited	FAC
Polygonaceae (Buckwheat Family)	<i>Rumex dentatus</i>	Toothed Dock	Naturalized	N/A	FACW
Ranunculaceae (Buttercup Family)	<i>Ranunculus muricatus</i>	Spinyfruit Buttercup	Naturalized	N/A	FACW
Ranunculaceae (Buttercup Family)	<i>Ranunculus sceleratus</i> var. <i>sceleratus</i>	Cursed Buttercup	Naturalized	N/A	OBL
Typhaceae (Cat-tail Family)	<i>Typha latifolia</i>	Broad-Leaved Cattail	Native	N/A	OBL
Urticaceae (Nettle Family)	<i>Urtica urens</i>	Dwarf Nettle	Naturalized	N/A	NL

Notes: Nomenclature corresponds to Jepson Manual, Second Edition (Baldwin et al. 2012) and Jepson Online Interchange (2019).

¹Cal-IPC Rank according to the California Invasive Plant Inventory (Cal-IPC 2020):

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

²Wetland Indicator Status categories according to the ACOE National Wetland Plant List Version 3.2 (Lichvar, R.W. et al. 2016):

OBL = obligate wetland; >99% probability of occurring in a wetland

FACW = facultative wetland; 67%-99% probability of occurring in a wetland

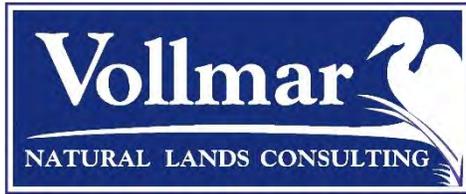
FAC = facultative; 33%-67% probability of occurring in a wetland

FACU = facultative upland; 1%-33% probability of occurring in a wetland

UPL = obligate upland; <1% probability of occurring in a wetland

NL = not listed (plants not listed in Lichvar et al. [2016], including some known to occur occasionally or primarily in wetlands)

APPENDIX D
CITY OF NEWMAN PROJECT SITE
2019-2020 90-DAY REPORT



SACRAMENTO OFFICE
2401 Capitol Ave
Sacramento, CA 95816
Phone: 916/758-6928
www.vollmarconsulting.com

CITY OF NEWMAN PROJECT SITE

2019-2020 90-DAY REPORT

Permit # TE-035336-6.2
USFWS Tracking #2020-TA-0135

Listed Large Branchiopods

Prepared for:

U.S. Fish & Wildlife Service
2800 Cottage Way, Suite W2605
Sacramento, CA 95825-3901
Contact: Sarah Markegard
916/414-6492

Prepared by:

Vollmar Natural Lands Consulting
2401 Capitol Ave, Suites 301&302
Sacramento, CA 95816
Contact: Cassie Pinnell
510/326-6296

June 2020
J-445-3

INTRODUCTION

This report presents the methods and results of protocol level large branchiopod surveys conducted during the dry (November 2019) and wet season (December 2019-April 2020) at the City of Newman Project site (Project), located in Merced County, California. The Project site consists of a 78-acre and 24-acre parcel, which are owned and managed by the City of Newman (**Figure 1**).

Wet season surveys were conducted by Vollmar Natural Lands Consulting (VNLC) lead biologists Jake Schweitzer, Eric Smith, and Cassie Pinnell, with assistance from Madeline Dills and Henry Hwang. Dry season soil sample collection for cyst analysis was conducted by Eric Smith. VNLC lead biologists are permitted under a Section 10(a)(1)(A) recovery permit for conducting listed large branchiopod surveys (**Permit #TE-035336-6.2**). Soil samples collected by VNLC were processed and analyzed by Dr. Brent Helm of Helm Biological Consulting (HBC) as authorized by the USFWS under recovery permit **#TE-795930-10.2**. Survey authorization was obtained on October 21, 2019 from Samantha Lantz of the USFWS Sacramento Field Office.

A Biological Resource Constraints Summary prepared by Kevin Merk Associates, LLC (June 2019) identified four large branchiopod species as having potential to occur on the Project site. These include the non-listed California fairy shrimp (*Linderiella occidentalis*), as well as three federally listed species, the longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardi*). No large branchiopod species were detected during either of the dry and wet season surveys conducted by VNLC from November 2019-April 2020.

METHODS

Methods followed USFWS *Survey Guidelines for Listed Large Branchiopods* (USFWS 2017) for both dry and wet season sampling.

Dry Season Sampling

VNLC Ecologist Eric Smith collected dry soil samples for cyst analysis on November 20, 2019. A hand spade was used to collect intact samples from the top 1-3 cm of soil. Samples were collected from 15 features throughout the Project site in the lowest topographic area of each feature. The number of samples taken at each feature was proportional to the size of the feature, with a maximum of 100 ml of soil collected per sample. If multiple samples were collected from the same feature, they were stored in the same storage container; containers were marked with the collection date, location of the feature, and name of the collector/Permittee. Samples containing any residual moisture were allowed to dry completely.

The collected soils were then delivered to HBC for subsequent processing and analysis. In HBC's laboratory, a brine solution was prepared by mixing table salt (NaCl) with lukewarm tap water in a large container. The collected soil material was placed in the brine solution. The soil material was then gently worked by hand to breakdown any persistent soil structure. The organic material rising to the top of the brine solution was skimmed off and placed in a 600-micron diameter pore-size sieve stacked atop a 75-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 soil retained from the 75-micron diameter pore size sieve was then removed and thinly (≈ 1.0 mm) spread into plastic petri dishes.

The contents of each petri dish were examined under a 10 to 252-power zoom binocular microscope. A minimum of 0.5-hour was spent searching the contents of each petri dish for large branchiopod cysts (embryonic eggs). Dr. Helm's large branchiopod cyst reference collection and scanning electron micrographs of cysts (Belk 1989, Brendock *et al.* 2008, Gilchrist 1978, Hill and Shepard 1998, Mura 1991, and Rabet 2010) were used to identify and compare any cysts observed within the soil samples. This processing method (described above) favors the detection of cysts belonging to the genera *Branchinecta*, *Lepidurus*, and *Streptocephalus* since these three genera have species that are federally listed. Evidence of other aquatic macroinvertebrates encountered was also noted on the laboratory data sheet.

Wet Season Sampling

VNLC conducted protocol-level large branchiopod surveys in a total of 11 features including one emergent wetland, one seasonal wetland swale, and nine seasonal wetlands across the Project site from December 2019 through April 2020. A total of seven surveys were conducted. Beginning in December 2019, VNLC biologists conducted weekly large branchiopod surveys on the following dates: December 27, 2019; January 6, 2020; January 16, 2020; and January 27, 2020. Due to drought conditions and the abrupt dry-down of water features on the Project site, wet season surveys were suspended in early February. Surveys resumed in late March as precipitation returned and wetland features re-ponded within the Project site. VNLC biologists conducted three large branchiopod surveys on the following dates: March 27, 2020; April 6, 2020; and April 16, 2020. As of April 20, 2020, VNLC biologists documented that all water features on the Project site had dried down. Consequently all large branchiopod surveys were halted.

For each sampled feature, surveys were conducted by first visually inspecting the water column for large branchiopods, then dip-netting using a fine mesh net with a 12-inch square aperture. Nets were moved through the water in 1-meter long sweeps spread throughout each feature and covering the entire water column. All aquatic invertebrates captured in the sample were recorded to the most relevant taxonomic level. Biologists also recorded the maximum current water depth in inches at each inundated feature, along with the feature's temperature in degrees Celsius. All features that held water were sampled during each survey round.

RESULTS

No large branchiopods were documented within the Project site during the protocol-level wet and dry season surveys. All features sampled by VNLC biologists during the 2019-2020 wet season are shown on **Figure 2**. **Table 1** lists all invertebrate taxa documented in each feature sampled by VNLC biologists. **Table 2** contains depth and temperature data recorded at each of the sampled features for all seven rounds of surveys. Representative photos are presented in **Appendix A**. HBC's full report documenting the methods and results of soil cyst analysis are presented in **Appendix B**.

SIGNATURE

“I certify that the information in this survey report and attached exhibits fully and accurately represents my work.”



Permittee's Signature (Cassie Pinnell)

June 9, 2020

Date

Table 1. 2019-2020 Wet Season Survey Results at the City of Newman Project Site, Merced County, CA. Data Compiled by Vollmar Consulting, 2020. UTM Zone 10N.

Feature ID ¹	UTM Northing	UTM Easting	Large Branchiopods ²				Ostracoda	Copepoda		Cladocera	Coleoptera		Hemiptera		Chironomidae	Diptera (land)	Planorbidae	Microturbellaria	Arachnida	Ephemeroptera	Gambusia
			LIOC	BRLO	BRLY	LEPA		Calanoida	Cyclopoida		Dytiscidae	Hydrophilidae	Notonectidae	Corixidae							
EW 01	4131152	676889					X	X	X	X	X	X	X	X	X	X	X	X		X	X
SW 17	4130612	676603									X	X									
SW 18	4130568	676626							X		X	X		X					X		
SW 19	4130536	676628							X					X		X		X	X		
SW 20	4130545	676643							X		X	X		X					X		
SW 21	4130470	676649							X		X	X				X		X			
SW 27	4131144	677139											X	X							
SW 29	4130979	677255					X	X	X		X	X	X	X				X	X		
SW 33	4130882	677345												X							
SW 45	4130923	677394							X	X	X			X	X						
SWS 04	4130526	676675					X		X		X			X		X		X			

Notes:

X= Present

¹ Feature ID Codes:

EW = Emergent Wetland

SW = Seasonal Wetland

SWS = Seasonal Wetland Swale

² Large Branchiopod Acronyms:

LIOC= *Lindieriella occidentalis*, California fairy shrimp

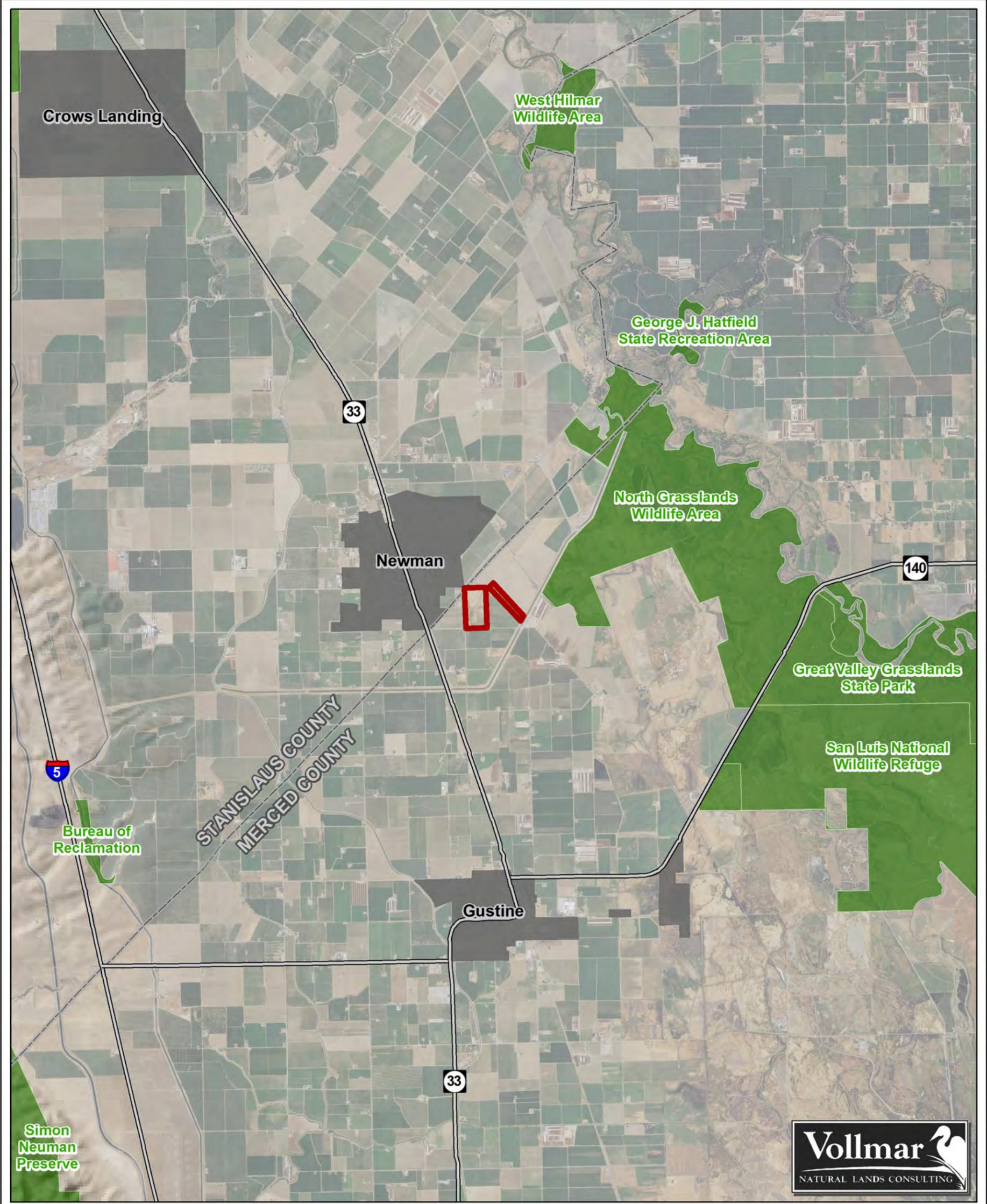
BRLO= *Branchinecta longiantenna*, longhorn fairy shrimp

BRLY= *Branchinecta lynchi*, vernal pool fairy shrimp

LEPA = *Lepidurus packardi*, vernal pool tadpole shrimp

Table 2. Depth and Temperature Data for Sampled Features During 2019-2020 Wet Season Surveys at the City of Newman Project Site, Merced County, CA. Data Compiled by Vollmar Consulting, 2020.

Feature ID	Round 1 12/27/2019		Round 2 1/06/2020		Round 3 1/16/20		Round 4 1/27/20		Round 5 3/27/20		Round 6 4/06/20		Round 7 (4/16/20)		Round 8 (4/20/20)	
	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)
EW 01	4	-	4	-	8	9	0	-	0	-	8	13	14	19	0	-
SW 17	0	-	0	-	0	-	0	-	0	-	9	13	0	-	0	-
SW 18	0	-	0	-	0	-	0	-	0	-	9	13	0	-	0	-
SW 19	0	-	0	-	0	-	0	-	0	-	7	12	0	-	0	-
SW 20	0	-	0	-	0	-	0	-	0	-	5.5	13	0	-	0	-
SW 21	0	-	0	-	0	-	0	-	0	-	7	13	0	-	0	-
SW 27	3	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
SW 29	3	-	0	-	2	10	0	-	0	-	0	-	0	-	0	-
SW 33	0	-	0	-	0	-	0	-	2	17	0	-	0	-	0	-
SW 45	2	-	3	-	2	10	0	-	0	-	0	-	0	-	0	-
SWS 04	0	-	0	-	0	-	0	-	0	-	10	13	0	-	0	-



Legend

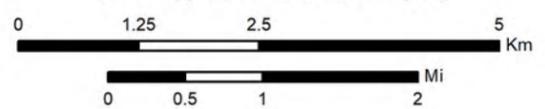
- Study Area
- County Boundary
- Urban Area
- Public Land
- Highway

FIGURE 1
Regional Vicinity Map
 Newman Community Conservation Area
 Merced County, California

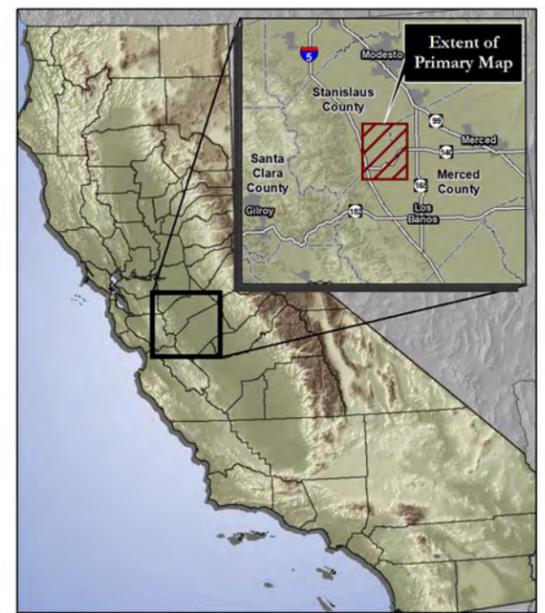


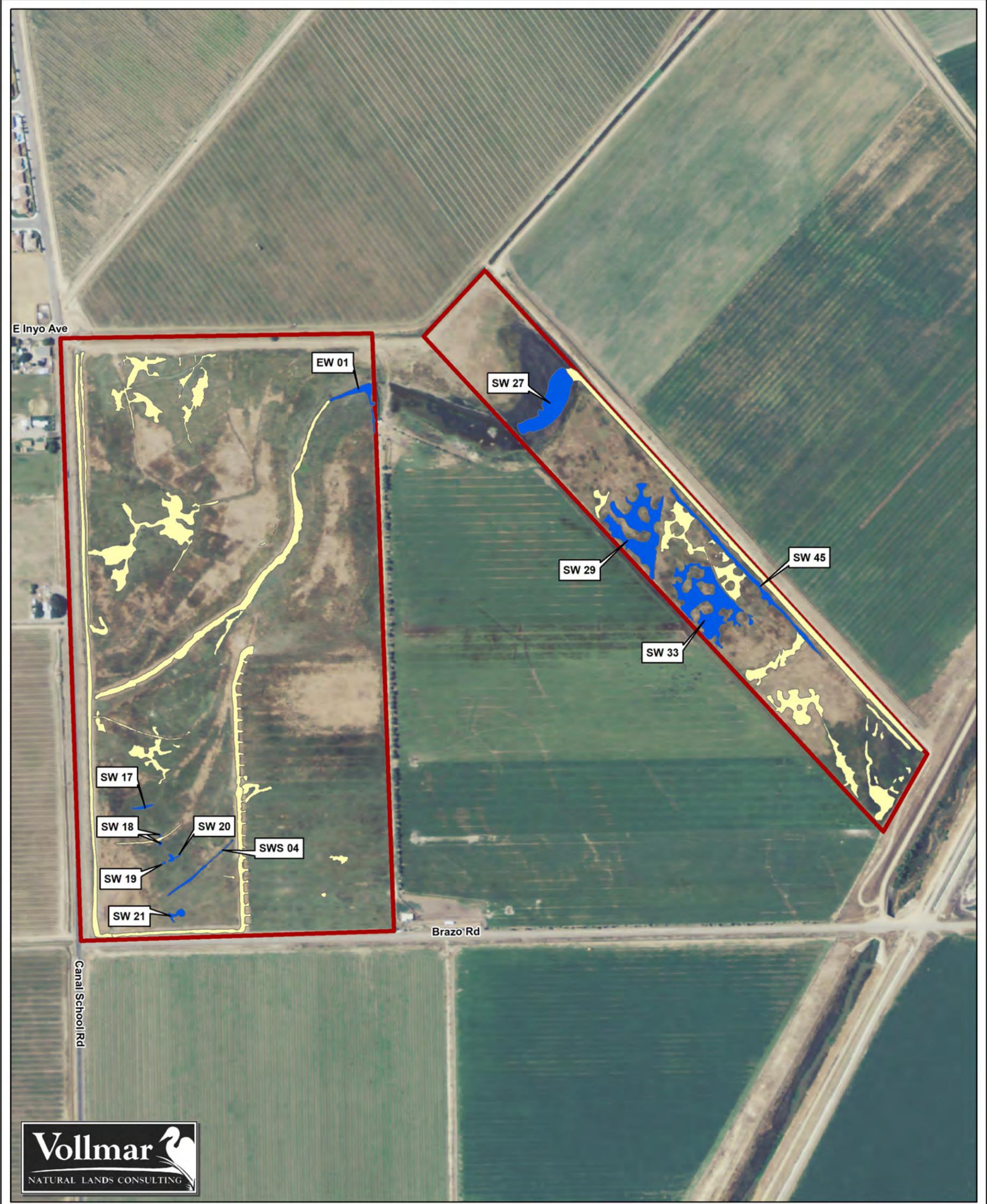
1:75,000

(1 in. = approx. 1.2 mi at tabloid layout)



Data Sources: EW, 2016 | USGS, Various Years
 GAP Project, 1998 | USDA NAIP, 2018
 US HUD, 2018 | CERES, 2012
 GIS/Cartography by: K. Chinn, May 2020
 Map File: Vicinity_445_B-P_2020-0601.mxd





Legend

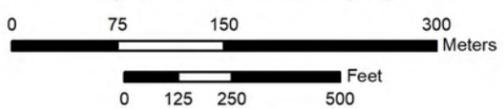
- Study Area
- Feature Sampled for Large Branchiopods
- Dry During All Survey Rounds

FIGURE 2
Large Branchiopod
Wet Season Sampling
 Newman Community Conservation Area
 Merced County, California



1:5,100

(1 in. = 425 ft. at tabloid layout)



Data Sources: EW, 2016 | USGS, Various Years
 GAP Project, 1998 | USDA, 2009 | VNLC, 2019-2020
 GIS/Cartography by: M. Dills, K. Chinn, June 2020
 Map File: WetSurveys_445_B-P_2020-0607.mxd



LITERATURE CITED

- Belk, D. 1989. Identification of species in the Conchostraca genus *Eulimnadia* by egg shell morphology. *Journal of Crustacean Biology*. 9(1): 115-125.
- Brendock, L., D. C. Rogers, J. Olesen, S. Weeks, and W. R. Hoch. 2008. Global diversity of large branchiopods (Crustacea: Branchiopoda) in freshwater. *Hydrobiologia*. 595: 167- 176.
- 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.
- Kevin Merk Associates, LLC. 2019. Biological Constraints Analysis for the City of Newman Proposition 1 Stormwater Program. Memorandum to Rick Engineering Company, Inc. June 20.
- Mura, G. 1991. SEM morphology of resting eggs in the species of the genus *Branchinecta* from North America. *J. Crust. Biol.* 11: 432-436.
- Rabet, N. 2010. Revision of the egg morphology of *Eulimnadia* (Crustacea, Branchiopoda, Spinicaudata). *Zoosystema* 32 (3): 373-391.
- U.S. Department of the Interior, U.S. Fish and Wildlife Service (USFWS). 2017. Survey guidelines for the listed large branchiopods. 24 pp. Dated: 31 May 2015 (Revised November 13, 2017).

APPENDIX A

REPRESENTATIVE PHOTOGRAPHS



Photo 1: Dry emergent wetland and general study area setting, facing northeast (1/27/20)



Photo 2: EW 01, facing east (4/06/20)



Photo 3: SW 29, facing northwest (4/06/20)



Photo 4: SW 21, facing southeast (1/27/20)



Photo 5: SW 21, facing southwest (1/27/20)



Photo 6: SW 27, facing south (1/27/20)

APPENDIX B

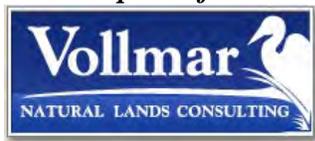
**DRY SOIL ANALYSIS FOR THE DETECTION OF
FEDERALLY-LISTED LARGE BRANCHIOPODS**

HELM BIOLOGICAL CONSULTING

**DRY SOIL ANALYSIS
FOR THE
DETECTION OF
FEDERALLY-LISTED LARGE BRANCHIOPODS
AT THE
NEWMAN WETLAND RESTORATION PROJECT,
MERCED COUNTY, CALIFORNIA**



Prepared for:



VOLLMAR NATURAL
LANDS CONSULTING
1720 Solano Avenue
Berkeley, CA 94707
Contact: Misaki Yonashiro
(916) 758-6928

Prepared by:



HELM BIOLOGICAL CONSULTING
4600 Karchner Road
Sheridan, CA 95681
Contact: Dr. Brent Helm
(530) 633-0220

January 2020



**DRY SOIL ANALYSIS
FOR THE
DETECTION OF
FEDERALLY-LISTED LARGE BRANCHIOPODS
AT THE
NEWMAN WETLAND RESTORATION PROJECT,
MERCED COUNTY, CALIFORNIA**

INTRODUCTION

Helm Biological Consulting (HBC), a division of Tansley Team, Inc., was contracted by Vollmar Natural Lands Consulting (VNLC) to perform an analysis of soils collected from dry seasonally inundated depressions (hereafter “basins”) at Newman Wetland Restoration Project (hereafter “Project”), for the presence of large branchiopods (fairy shrimp, tadpole shrimp) that are listed as threatened or endangered under the federal Endangered Species Act (e.g., vernal pool fairy shrimp [*Branchinecta lynchi*] and the vernal pool tadpole shrimp [*Lepidurus packardii*]).

The Project is located immediately east of Canal School Road, north of Braza Road, near the City of Newman in Merced County, California (Figure 1). Additionally, the Project is located in Section 20, Township 7 South, Range 9 East, and Mt. Diablo Base & Meridian (MDB&M) of the Fresno, Mendota, and Merced U.S. Geological Survey 100k quadrangle map. The Project’s approximate center coordinates (World Geodetic System 1984 [WGS84]) are: 37.310811°, -121.003549°.

The remainder of this report discusses the methods and results of the soil examinations to determine the presence of federally-listed large branchiopods at the Project.

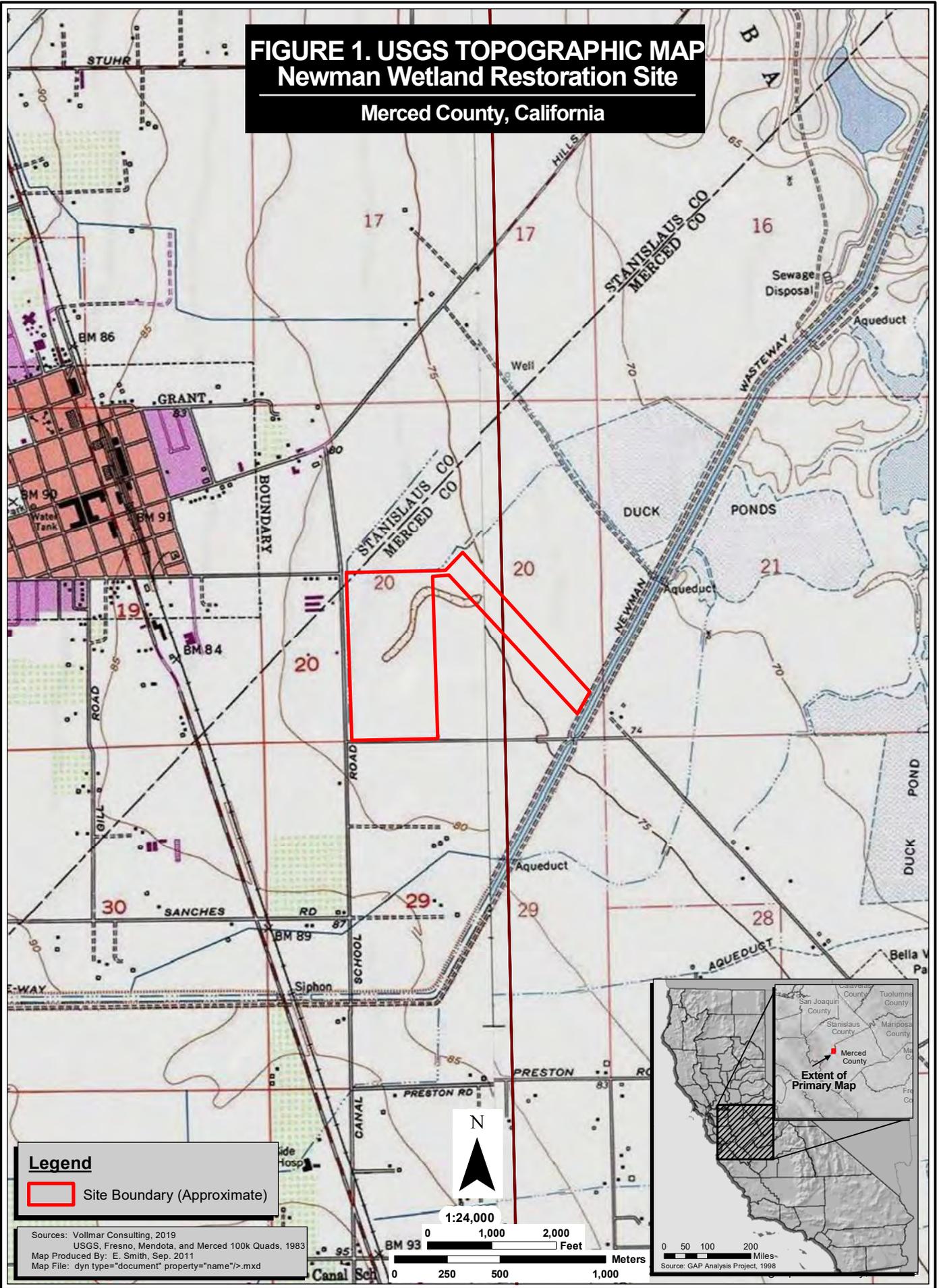


“We certify that the information in this survey report and attached exhibits fully and accurately represents our work.”

Brent P. Helm Signature  Date 01-28-2020
(TE-795930-10.2)

Sean M. O'Brien Signature  Date 01-28-2020
(TE-795930-10.2)

FIGURE 1. USGS TOPOGRAPHIC MAP
Newman Wetland Restoration Site
 Merced County, California



METHODS

Methods followed U.S. Fish and Wildlife Service's (USFWS 2017) *Survey Guidelines for Listed Large Branchiopods* for dry-season sampling and consisted of first soil collection and then soil processing and analysis as described below.

SOIL COLLECTION

Dry soils were collected on November 20, 2019 by Eric Smith of VNLC as authorized by USFWS under permit number TE-035336-5 of Section 10(a)(1)(A) of the federal Endangered Species Act (ESA), 16 U.S.C. 1531 et seq., and its implementing regulations (Appendix A). The collected soils were delivered to HBC for subsequent processing and analysis as described below.

SOIL PROCESSING AND ANALYSIS

Soil samples obtained from VNLC were processed and analyzed by Dr. Brent Helm of HBC as authorized by the USFWS under recovery permit number TE-795930-10.2 of Section 10(a)(1)(A) of the federal ESA, 16 U.S.C. 1531 et seq., and its implementing regulations (Appendix A). In HBC's laboratory, a brine solution was prepared by mixing table salt (NaCl) with lukewarm tap water in a large container. The collected soil material was placed in the brine solution. The soil material was then gently worked by hand to breakdown any persistent soil structure. The organic material rising to the top of the brine solution was skimmed off and placed in a 600-micron diameter pore-size sieve stacked atop a 75-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 soil retained from the 75-micron diameter pore size sieve was then removed and thinly (≈ 1.0 mm) spread into plastic petri dishes.

The contents of each petri dish were examined under a 10 to 252-power zoom binocular microscope. A minimum of 0.5-hour was spent searching the contents of each petri dish for large branchiopod cysts (embryonic eggs). Dr. Helm's large branchiopod cyst reference collection and scanning electron micrographs of cysts (Belk 1989, Brendock *et al.* 2008, Gilchrist 1978, Hill and Shepard 1998, Mura 1991, and Rabet 2010) were used to identify and compare any cysts observed within the soil samples. This processing method (described above) favors the detection of cysts belonging to the genera *Branchinecta*, *Lepidurus*, and *Streptocephalus* since these three genera have species that are federally listed. Evidence of other aquatic macroinvertebrates encountered was also noted on the laboratory data sheet.

RESULTS

SOIL COLLECTION

Soil samples were collected from a total of 15 basins at the Project by VNLC (Exhibit A).

SOIL PROCESSING AND ANALYSIS

All of the soils collected by VNLC were processed and analyzed for evidence of large branchiopods. No evidence of federally-listed large branchiopods (i.e., cysts belonging to the genus *Branchinecta* or *Lepidurus* or carapaces of *Lepidurus*) were observed in the soils collected (Table 1). Representative photographs of the basins sampled are provided in Appendix B.

Table 1. Results of Soil Examinations (2020) from the Newman Wetland Restoration Project

Basin No.	Invertebrates Present (X)			
	Insects Exo-skeletons	Cladocera Ehippia	Ostracod Cysts/ Carapaces	Collembola
01	X	X		X
02	X	X		
03	X	X		
04	X	X		
05	X	X		
06	X	X	X	
07	X	X		
08	X	X		
09	X	X		
10	X	X		
11	X	X		X
12	X	X	X	
13	X	X		
14	X	X		
15	X	X	X	

LITERATURE CITED

- Belk, D. 1989. Identification of species in the Conchostraca genus *Eulimnadia* by egg shell morphology. *Journal of Crustacean Biology*. 9(1): 115-125.
- Brendock, L., D. C. Rogers, J. Olesen, S. Weeks, and W. R. Hoch. 2008. Global diversity of large branchiopods (Crustacea: Branchiopoda) in freshwater. *Hydrobiologia*. 595: 167-176.
- California Department of Fish and Wildlife (CDFW). 2019. California Natural Diversity Data Base. Available online at: <https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>.
- 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.
- Rabet, N. 2010. Revision of the egg morphology of *Eulimnadia* (Crustacea, Branchiopoda, Spinicaudata). *Zoosystema* 32 (3): 373-391.
- U.S. Department of the Interior, U.S. Fish and Wildlife Service (USFWS). 2017. Survey guidelines for the listed large branchiopods. 24 pp. Dated: 31 May 2015 (Revised November 13, 2017).

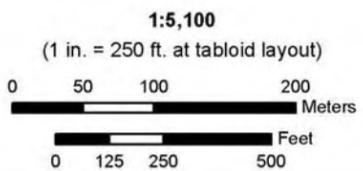


EXHIBIT A.
LARGE BRANCHIPOD DRY SAMPLES
NEWMAN WETLAND RESTORATION PROJECT
STANISLAUS AND MERCED COUNTIES, CALIFORNIA



Exhibit A
Large Branchiopod Dry Samples
 Newman Wetland Restoration Project
 Stanislaus and Merced Counties, California

- Legend**
- Parcel Boundary (~103 acres)
 - Potential Jurisdictional Features**
 - Perennial Marsh
 - Seasonal Wetland
 - Ditch
 - Collection Point (1-15)



Data Sources: EW, 2016 | USGS, Various Years
 GAP Project, 1998 | USDA, 2009 | VNLC, 2019
 GIS/Cartography by: M. Dills, K. Chinn, Oct. 2019
 Map File: DS_445_B-P_2020-0124.mxd



APPENDIX A.
USFWS AUTHORIZATION

Survey Authorization Request, Newman Wetland Restoration Project

Lantz, Samantha <samantha_lantz@fws.gov>

Mon 10/21/2019 7:43 AM

To: Eric Smith <esmith@vollmarconsulting.com>

Cc: Sarah Markegard <sarah_markegard@fws.gov>; Patricia Cole <patricia_cole@fws.gov>; Cassie Pinnell <cpinnell@vollmarconsulting.com>

Eric,

By this email message you are authorized to conduct surveys for federally-listed branchiopods at the Newman Wetland Restoration Site in Merced County, per the conditions of recovery permit TE-035336-5 and as specified in your email request dated October 10, 2019.

Surveys may be conducted within all seasonally inundated wetlands on-site that may provide suitable habitat. Remember to carry a copy of your permit while doing the work, and to follow the terms and conditions of the permit and the USFWS Survey Protocols for listed branchiopods, 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 electronic copies of the report(s) to myself and Patricia Cole (cc'd). We ask that you use UTM coordinates for all spatial data and that you use Service reference number 2020-TA-0135 in future correspondence for these surveys.**

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 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.

Best,

Sam

Samantha Lantz, Ph.D.

Fish and Wildlife Biologist

USFWS, Sacramento Field Office

Listing and Recovery Division

2800 Cottage Way W-2605

Sacramento, CA 95825-1888

Phone: 916-414-6526



APPENDIX B.
REPRESENTATIVE PHOTOGRAPHS



Photograph of Basin 1 taken by VNLC on November 20, 2019.



Photograph of Basin 2 taken by VNLC on November 20, 2019.



Photograph of Basin 3 taken by VNLC on November 20, 2019.



Photograph of Basin 4 taken by VNLC on November 20, 2019.



Photograph of Basin 5 taken by VNLC on November 20, 2019.



Photograph of Basin 6 taken by VNLC on November 20, 2019.



Photograph of Basin 7 taken by VNLC on November 20, 2019.



Photograph of Basin 8 taken by VNLC on November 20, 2019.



Photograph of Basin 9 taken by VNLC on November 20, 2019.



Photograph of Basin 10 taken by VNLC on November 20, 2019.



Photograph of Basin 11 taken by VNLC on November 20, 2019.



Photograph of Basin 12 taken by VNLC on November 20, 2019.



Photograph of Basin 13 taken by VNLC on November 20, 2019.



Photograph of Basin 14 taken by VNLC on November 20, 2019.



Photograph of Basin 15 taken by VNLC on November 20, 2019.