BIOLOGICAL RESOURCES TECHNICAL REPORT

CITY OF SACRAMENTO GROUNDWATER MASTER PLAN

SACRAMENTO, SACRAMENTO COUNTY, CALIFORNIA

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ENVIRONMENTAL CONSULTANTS

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Overview and Purpose 1
1.2 Project Description 1
1.3 Summary of Results 2
2.0 REGULATORY BACKGROUND 7
2.1 Federal and State Regulatory Setting 7
2.1.1 Vegetation and Aquatic Communities 7
2.1.2 Special-status Species 8
2.2 Local Regulatory Setting 10
3.0 ASSESSMENT METHODOLOGY 11
3.1 Vegetation Communities and Other Land Cover Types 12
3.2 Special-status Species 13
3.2.1 General Assessment 13
3.2.2 Special-status Plants 13
3.2.3 Special-status Wildlife 14
3.3 Wildlife Corridors and Native Wildlife Nursery Sites 14
4.0 ECOLOGICAL SETTING 15
4.1 Soils and Topography 15
4.2 Climate and Hydrology 16
4.3 Land-use 16
5.0 ASSESSMENT RESULTS 17
5.1 Vegetation Communities and Other Land Cover 17
5.1.1 Terrestrial Land Cover 17
5.1.2 Aquatic Resources 18
5.2 Special-status Species 19
5.2.1 Special-status Plants 19
5.2.2 Special-status Wildlife 21
5.3 Wildlife Corridors and Native Wildlife Nursery Sites 27
6.0 ANALYTICAL METHODOLOGY AND SIGNIFICANCE THRESHOLD CRITERIA 28
7.0 IMPACTS AND MITIGATION EVALUATION 29
7.1 Special-status Species 30
7.2 Sensitive Land Cover Types 35
7.3 Aquatic Resources 36

7.4 Wildlife Corridors and Native Wildlife Nursery Sites 37
7.5 Local Policies and Ordinances 38
7.6 Habitat Conservation Plans 39
8.0 REFERENCES 40

LIST OF TABLES

Table 1. Summary of Biological Resources Evaluation 4
Table 2. Soil Mapping Units within the Study Area 15
Table 3. Sensitive Land Cover Types 17
Table 4. Potential Special-status Plants 19
Table 5. Potential Special-status Wildlife 23
Table 6. Potential Sensitive Land Cover Types, City Trees, and Special-status Species by Well Site 29

LIST OF APPENDICES

Appendix A – Figures
Figure 1. Study Area Location
Figure 2. Special-status Plants Documented within 5-miles of the Study Area
Figure 3. Special-status Wildlife Documented within 5-miles of the Study Area
Figure 4. Sensitive Land Cover Types in the Study Area
Appendix B – Species Observed within and around the Study Area
Appendix C – Special-Status Species Potential Table
Appendix D – Representative Photographs

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DEFINITIONS

Study Area: The area throughout which the assessment was performed, inclusive of 38 discrete Well Sites in the City of Sacramento.
Well Site: The area evaluated for potential direct impacts to sensitive biological resources, inclusive of a proposed project footprint and surrounding 100-foot buffer.

LIST OF ACRONYMS

BGEPA	Bald and Golden Eagle Protection Act
BIOS	Biogeographic Information and Observation System
BRTR	Biological Resources Technical Report
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
CFP	California Fully Protected Species
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
County	County of Sacramento
Corps	U.S. Army Corps of Engineers
CSRL	California Soils Resources Lab
CWA	Clean Water Act
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
GGS	Giant Garter Snake
ITP	Incidental Take Permit
LSAA	Lake or Streambed Alteration Agreement
Magnusen-Stevens Act	Magnuson-Stevens Fishery Conservation & Management
MBTA	Migratory Bird Treaty Act
NBHCP	Natomas Basin Habitat Conservation Plan
NOAA	National Oceanic and Atmospheric Administration
NMFS	National Marine Fisheries Service
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
NWPL	National Wetland Plant List
OHWM	Ordinary High Water Mark
Rank	California Rare Plant Ranks
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
SWHA	Swainson's Hawk
SWRCB	State Water Resource Control Board
TOB	Top of Bank

USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	Valley Elderberry Longhorn Beetle
VPFS	Vernal Pool Fairy Shrimp
VPTS	Vernal Pool Tadpole Shrimp
WBWG	Western Bat Working Group
WRA	WRA, Inc.

1.0 INTRODUCTION

This Biological Resources Technical Report evaluates existing biological resources, potential impacts, and mitigation measures (if required) for the City of Sacramento Groundwater Master Plan Project (Project). WRA, Inc. (WRA) performed a constraints assessment of biological resources on 38 discrete Well Sites located within the City of Sacramento, Sacramento County, California. Well Sites and a surrounding 100-foot buffer, collectively referred to as the Study Area, are all located in Sacramento County, California (Figure 1). The Study Area is a mix of undeveloped vacant land, parks, schools, median strips and industrial areas. Some of the individual Well Sites have some degree of infrastructure development, though most do not. The majority of the Well Sites are within or adjacent to areas of existing commercial and/or residential development. Site assessments were conducted between June 22 and June 26, 2020, to determine site conditions and identify potential constraints to future project activities at the Well Sites with respect to local regulations and ordinances and to identify any potential biological constraints pursuant to the California Environmental Quality Act (CEQA).

This report describes the results of the site visits, which assessed the Study Area for the (1) potential to support special-status species; and (2) presence of other sensitive biological resources protected by local, state, and federal laws and regulations.

1.1 Overview and Purpose

This report provides an assessment of biological resources within the Study Area and immediate vicinity. The assessment did not include a full protocol-level surveys for special-status species, though they were searched for if identifiable. The purpose of the assessment was to develop and gather information on sensitive biological communities and special-status plant and wildlife species to support an evaluation of the Project under CEQA. This report describes the results of the site visit, which assessed the Study Area for (1) the presence of sensitive biological communities, special-status plant species, and special-status wildlife species, (2) the potential for the site to support special-status plant and wildlife species. Based on the results of the site assessment, potential impacts to sensitive biological communities and special-status species resulting from the proposed project were evaluated. If the project has the potential to result in significant impacts to these biological resources, measures to avoid, minimize, or mitigate for those significant impacts are described.

A biological resources technical report provides general information on the presence, or potential presence, of sensitive species and habitats. Additional focused studies (such as protocol-level species surveys or wetland delineation) may be required to support regulatory permit applications or to implement mitigation measures included in this report. This assessment is based on information available at the time of the study and on site conditions that were observed on the dates the Well Sites were visited. Conclusions are based on currently available information used in combination with the professional judgement of the biologists completing this study.

1.2 Project Description

The City of Sacramento Well Replacement Program involves the construction and operation of up to 38 groundwater extraction wells within the City's water service area, which overlies the North American and

South American Subbasins of the Sacramento Valley Groundwater Basin, as well as distribution system improvements and the decommissioning of 38 existing active and inactive municipal wells that are at or near the end of their useful life.

The Well Sites are generally in an urban setting. Surrounding land uses for existing and proposed replacement wells include single-family residential, multi-family residential, schools, commercial, office, public facilities (such as existing well sites, water storage facilities, and water treatment facilities), and open space/park.

1.2.1 Construction Activities

Construction of wells under the Project would take place in four stages:

- Exploratory drilling would involve construction of test holes or monitoring wells to characterize the groundwater conditions at the site.
- Well drilling and construction would involve clearing of a pad for a drill rig followed by drilling operations, which would require drilling 24 hours per day for at least two weeks. Drilling may take longer for deeper wells. Wells would range in depth from about 250 feet to 1,200 feet.
- Well equipping includes the construction of all above-grade facilities as well below grade pipelines to connect the replacement well to the potable water distribution system. The remainder of the site would be cleared and the well and control building would be constructed. The site would be paved, landscaped and fenced. Pipelines to connect to the potable water distribution system would be constructed and each well would be connected to the sewer system for disposal of backwash water. Each well site would be about one acre in size (200 feet by 200 feet).
- Well destruction would entail removal of existing wells. If replacement wells are sited at an existing well facility the existing well would be destroyed in accordance with California Well Standards. If a replacement well is not located at the site of an existing well, well destruction would include removal of all above-ground facilities at the well site, with the exception of fencing, and underground piping would be abandoned in place.

During well drilling and equipping, the contractor would employ a staging area adjacent to the well site to store drilling equipment and materials. Staging areas would typically be in parking lots, lawn areas, or vacant land.

1.3 Summary of Results

In summary, no special-status species of plants or wildlife were observed during the site visits. However, based on a review of available information and an assessment of site conditions, WRA concludes that there is potential for special-status plants and wildlife, regulated habitats (e.g. wetlands and streams) and trees subject to local ordinances to occur within the Study Area, though this potential is restricted to a limited number of the discrete Well Sites. These constraints are described in greater detail in the following sections and are described in the context of the individual Well Sites that may support them. In addition, five of the Well Sites are within the Natomas Basin Habitat Conservation Plan (NBHCP).

Table 1. Summary of Biological Resources Evaluation

CEQA Assessment Category[1] IV. - Biological Resources	Biological Resources Considered	Relevant Laws and Regulations	Responsible Regulatory Agency	Summary of Findings & Report Section[2]
Question A. Special-status species	Special-status Plants Special-status Wildlife Designated Critical Habitat	Federal Endangered Species Act (ESA), California Endangered Species Act (CESA), California Native Plant Protection Act (CNPPA), Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA)	U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW)	Potentially significant impacts were identified and mitigation measures included that reduce those impacts to a level that is less-than-significant. See Section 7.1 for more information
Question B. Sensitive natural communities & Riparian habitat	Sensitive Natural Communities Streams, Lakes, & Riparian Habitat	California Fish and Game Code (CFGC), Oak Woodland Conservation Act, Porter-Cologne Water Quality Control Act, Clean Water Act (CWA)	California Department of Fish and Wildlife (CDFW), U.S. Army Corps of Engineers (Corps), U.S. Environmental Protection Agency (EPA), State Water Resources Control Board (SWRCB), Regional Water Quality Control Board (RWQCB)	Potentially significant impacts were identified and mitigation measures included that reduce those impacts to a level that is less-than-significant. **See Section 7.2 for more information**
Question C. State and federally protected wetlands	Wetlands Unvegetated surface waters	Clean Water Act (CWA) Sections 404/401, Rivers and Harbors Act Section 10, Porter-Cologne Water Quality Control Act	U.S. Army Corps of Engineers (Corps), U.S. Environmental Protection Agency (EPA), State Water Resources Control Board (SWRCB), Regional Water Quality Control Board (RWQCB)	Potentially significant impacts were identified and mitigation measures included that reduce those impacts to a level that is less-than-significant. **See Section 7.3 for more information**

[1] *CEQA Questions have been summarized here; see Section 6.2 for details.*
[2] *As given in this report; see Section 5.0 subheadings*

CEQA Assessment Category1IV. -Biological Resources	Biological Resources Considered	Relevant Laws and Regulations	Responsible Regulatory Agency	Summary of Findings & Report Section2
Question D. Fish & wildlife corridors	Essential Fish Habitat, Wildlife Corridors	California Fish and Game Code (CFGC), Magnusen-Stevens Fishery Conservation & Management Act	California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS)	Potentially significant impacts were not identified during this assessment. **See Section 7.4 for more information**
Question E. Local policies	Protected Trees Other biological protections	Local Tree Ordinance, General Plan (e.g., Stream & Wetland Setbacks), Local ordinances	Local and regional agencies	Potentially significant impacts were identified and mitigation measures included that reduce those impacts to a level that is less than significant. **See Section 7.5 for more information**
Question F. Local, state, federal conservation plans	Habitat Conservation Plans, Natural Community Conservation Plans	Federal Endangered Species Act (ESA), Natural Community Conservation Planning Act (NCCPA)	U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW)	Potentially significant impacts were not identified. **See Section 7.6 for more information**

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2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological resources technical report, including applicable laws and regulations that were applied to the field investigations and analysis of potential project impacts. Table 1 shows the correlation between these regulations and each Biological Resources question in the Environmental Checklist Form (Appendix G) of the CEQA guidelines.

2.1 Federal and State Regulatory Setting

2.1.1 Vegetation and Aquatic Communities

CEQA provides protections for particular vegetation types defined as sensitive by the CDFW, and aquatic communities protected by laws and regulations administered by the EPA, Corps, SWRCB, and RWQCB. The laws and regulations that provide protection for these resources are summarized below.

Sensitive Natural Communities: Sensitive natural communities include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" (CDFG 2010, CDFW 2018a) and keeps records of their occurrences in its California Natural Diversity Database (CNDDB; CDFW 2020a). CNDDB vegetation alliances are ranked 1 through 5 based on NatureServe's (2020) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW or USFWS must be considered and evaluated under CEQA (CCR Title 14, Div. 6, Chap. 3, Appendix G). In addition, this general class includes oak woodlands that are protected by local ordinances under the Oak Woodlands Protection Act.

Waters of the United States, Including Wetlands: The Corps regulates “Waters of the United States” under Section 404 of the CWA. Waters of the United States are defined in the Code of Federal Regulations (CFR) as including the territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, such as tributaries, lakes and ponds, impoundments of waters of the U.S., and wetlands (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the Corps Wetlands Delineation Manual (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Unvegetated waters including lakes, rivers, and streams may also be subject to Section 404 jurisdiction and are characterized by an ordinary high water mark (OHWM) identified based on field indicators such as the lack of vegetation, sorting of sediments, and other indicators of flowing or standing water. The placement of fill material into Waters of the United States generally requires a permit from the Corps under Section 404 of the CWA.

The Corps also regulates construction in navigable waterways of the U.S. through Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 USC 403). Section 10 of the RHA requires Corps approval and a permit for excavation or fill, or alteration or modification of the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor or refuge, or enclosure within the limits of any breakwater, or of the channel of any navigable water of the United States. Section 10 requirements apply only to navigable waters themselves, and are not applicable to tributaries, adjacent wetlands, and similar aquatic features not capable of supporting interstate commerce.

Waters of the State, Including Wetlands: The term "Waters of the State" is defined by the Porter-Cologne Water Quality Control Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The SWRCB and nine RWQCB districts protect waters within this broad regulatory scope through many different regulatory programs. Waters of the State in the context of a CEQA Biological Resources evaluation include wetlands and other surface waters protected by the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*. The SWRCB and RWQCB issue permits for the discharge of fill material into surface waters through the State Water Quality Certification Program, which fulfills requirements of Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require a CWA permit are also required to obtain a Water Quality Certification. If a project does not require a federal permit, but does involve discharge of dredge or fill material into surface waters of the State, the SWRCB and RWQCB may issue a permit in the form of Waste Discharge Requirements.

Sections 1600-1616 of California Fish and Game Code: Streams and lakes, as habitat for fish and wildlife species, are regulated by CDFW under Sections 1600-1616 of CFGC. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake or Streambed Alteration Agreement (LSAA). The term "stream", which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life [including] watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR 1.72). The term "stream" can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). Riparian vegetation has been defined as "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 LSAA from CDFW.

2.1.2 Special-status Species

Endangered and Threatened Plants, Fish and Wildlife. Specific plant and wildlife species may be designated as threatened or endangered by the ESA, or CESA. Specific protections and permitting mechanisms for these species differ under each of these acts, and a species' designation under one law does not automatically provide protection under the other.

The ESA (16 USC 1531 et seq.) is implemented by the USFWS and the NMFS. The USFWS and NMFS maintain lists of "endangered" and "threatened" plant and wildlife species (referred to as "listed species"). "Proposed" or "candidate" species are those that are being considered for listing, and are not protected until they are formally listed as threatened or endangered. Under the ESA, authorization must be obtained from the USFWS or NMFS prior to take of any listed species. Take under the ESA is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Take under the ESA includes direct injury or mortality to individuals, disruptions in normal behavioral patterns resulting from factors such as noise and visual disturbance, and impacts to habitat for listed species. Actions that may result in "take" of an ESA-listed species may obtain a permit under ESA Section 10, or via the interagency consultation described in ESA Section 7. Federal-listed plant species are only protected when take occurs on federal land.

The ESA also provides for designation of critical habitat, which are specific geographic areas containing physical or biological features "essential to the conservation of the species". Protections afforded to designated critical habitat apply only to actions that are funded, permitted, or carried out by federal agencies. Critical habitat designations do not affect activities by private landowners if there is no other federal agency involvement.

The CESA (CFGC 2050 et seq.) prohibits a "take" of any plant and animal species that the California Fish and Game Commission determines to be an endangered or threatened species in California. CESA regulations include take protection for threatened and endangered plants on private lands, as well as extending this protection to "candidate species" which are proposed for listing as threatened or endangered under CESA. The definition of a "take" under CESA ("hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") only applies to direct impact to individuals, and does not extend to habitat impacts or harassment. CDFW may issue an Incidental Take Permit (ITP) under CESA to authorize take if it is incidental to otherwise lawful activity and if specific criteria are met. Take of these species is also authorized if the geographic area is covered by a Natural Community Conservation Plan (NCCP), as long as the NCCP covers that activity.

Fully Protected Species and Designated Rare Plant Species. This category includes specific plant and wildlife species that are designated in CFGC as protected even if not listed under CESA or the ESA. Fully Protected Species include specific lists of birds, mammals, reptiles, amphibians, and fish designated in CFGC. Fully protected species may not be taken or possessed at any time and, therefore, no licenses or permits may be issued for take of fully protected species, except for necessary scientific research and conservation purposes. The definition of "take" is the same under the California Fish and Game Code and the CESA. By law, CDFW may not issue an Incidental Take Permit (ITP) for Fully Protected Species. Under the California Native Plant Protection Act (NPPA), CDFW has listed 64 "rare" or "endangered" plant species, and prevents "take", with few exceptions, of these species. CDFW may authorize take of species protected by the NPPA through the ITP process, or under a NCCP.

Special Protections for Nesting Birds and Bats. The federal Bald and Golden Eagle Protection Act (BGEPA) provides relatively broad protections to both of North America's eagle species (bald eagle [*Haliaeetus leucocephalus*] and golden eagle [*Aquila chrysaetos*]) that in some regards are similar to those provided by the ESA. In addition to regulations for special-status species, most native birds in the United States, including non-status species, have baseline legal protections under the Migratory Bird Treaty Act (MBTA) of 1918 and CFGC, i.e., sections 3503, 3503.5 and 3513. Under these laws/codes, the intentional harm or collection of adult birds as well as the intentional collection or destruction of active nests, eggs, and young is illegal. For bat species, the Western Bat Working Group (WBWG) designates conservation status for species of bats, and those with a high or medium-high priority are typically given special consideration under CEQA.

Essential Fish Habitat. The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) provides for conservation and management of fishery resources in the U.S., administered by NMFS. This Act establishes a national program intended to prevent overfishing, rebuild overfished stocks, ensure conservation, and facilitate long-term protection through the establishment of Essential Fish Habitat (EFH). EFH consists of aquatic areas that contain habitat essential to the long-term survival and health of fisheries, which may include the water column, certain bottom types, vegetation (e.g. eelgrass (*Zostera* spp.)), or complex structures such as oyster beds. Any federal agency that authorizes, funds, or undertakes action that may adversely affect EFH is required to consult with NMFS.

Species of Special Concern, Movement Corridors, and Other Special Status Species under CEQA. To address additional species protections afforded under CEQA, CDFW has developed a list of special species as "a general term that refers to all of the taxa the CNDDB is interested in tracking, regardless of their legal or protection status." This list includes species lists developed by other organizations, including for example, the Audubon Watch List Species, the Bureau of Land Management Sensitive Species, and USFWS Birds of Special Concern. Plant species on the California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (Inventory) with California Rare Plant Ranks (Rank) of 1, 2, and 3 are also considered special-status plant species and must be considered under CEQA. Rank 4 species are typically only afforded protection under CEQA when such species are particularly unique to the locale (e.g., range limit, low abundance/low frequency, limited habitat) or are otherwise considered locally rare. Additionally, any species listed as sensitive within the NBHCP, or other local plans, policies and ordinances are likewise considered sensitive in the HCP area. Movement and migratory corridors for native wildlife (including aquatic corridors) as well as wildlife nursery sites are given special consideration under CEQA.

2.2 Local Regulatory Setting

City of Sacramento 2035 General Plan

The City of Sacramento's 2035 General Plan (General Plan; City of Sacramento 2015a) was written to serve as a guide for future development and growth in the City of Sacramento. Included in the General Plan is guidance pertaining to environmental resources, including "riparian habitat," "annual grasslands," and "wetland protection." Relevant General Plan language is as follows:

ER 2.1.6 Wetland Protection. The City shall preserve and protect wetland resources including creeks, rivers, ponds, marshes, vernal pools, and other seasonal wetlands, to the extent feasible. If not feasible, the mitigation of all adverse impacts on wetland resources shall be required in compliance with State and Federal regulations protecting wetland resources, and if applicable, threatened or endangered species. Additionally, the City shall require either on- or off-site permanent preservation of an equivalent amount of wetland habitat to ensure no net-loss of value and/or function.

Applicable Habitat Conservation Plans (HCPs)

Natomas Basin Habitat Conservation Plan

The NBHCP (City of Sacramento et al. 2003) was developed to promote biological conservation together with in conjunction with economic and urban development within the Natomas Basin, which is located in northern Sacramento County and southern Sutter County. The NBHCP establishes a multi-species conservation program designed to allow for continued development within the Natomas Basin while mitigating the anticipated impacts to habitats and the incidental take of protected species resulting from development. Projects located within the NBHCP Area may obtain permits and mitigation coverage through payment of in-lieu fees to the NBHCP. Projects receiving permits through the NBHCP must also implement avoidance and minimization measures included in the NBHCP to reduce the potential for take of covered species. These measures are outlined in Chapter 5 of the NBHCP. Measures include a pre-construction survey between 30 days and 6 months (or prior year for species with seasonal survey windows) prior to initiation of construction activities and additional species-specific conservation measures.

The Study Area is partially located within the NBHCP Area. The five Well Sites that are located within the NBHCP area are: Well 15, Well 19, Well 20, Well 23, and Well 39.

City of Sacramento Tree Ordinance. The City of Sacramento Tree Ordinance requires approval for the regulated work to City Trees for public projects (Section 12.56.040). Regulated work includes planting, removal, or work which may adversely impact the health of trees on City property. The Ordinance defines a "City Tree" as:

> Any tree the trunk of which, when measured at 4.5 feet above ground is partially or completely located in a city park, or on real property the city owns…"

If a public project may potentially remove City Trees, and avoidance is not feasible, the city project manager shall provide written justification to the director of the need to remove City Trees for the public project. City Trees that have a diameter at standard height (DSH) of 4 inches or more require approval of the director. If the DSH is less than 4 inches, the tree shall be removed as provided in Section 12.56.030. C.

3.0 ASSESSMENT METHODOLOGY

On June 22 through June 24, 2020, WRA biologists visited the Study Area to map vegetation, aquatic communities, unvegetated land cover types, document plant and wildlife species present, and evaluate habitat on site for the potential to support special status species as defined by the CEQA. Prior to the site visit, WRA biologists reviewed literature resources and performed database searches to assess the potential for sensitive biological communities (e.g., wetlands) and special-status species (e.g., endangered plants), including:

- Soil Survey of Sacramento County, California (USDA 1993)
- Sacramento East and Rio Linda 7.5-minute quadrangle (USGS 2018)
- Contemporary aerial photographs (Google Earth 2020)
- Historical aerial photographs (Historical Aerials 2020)
- National Wetlands Inventory (USFWS 2020a)
- California Aquatic Resources Inventory (SFEI 2020)
- California Natural Diversity Database (CNDDB, CDFW 2020a)
- California Native Plant Society Electronic Inventory (CNPS 2020a)
- Consortium of California Herbaria (CCH 2020)
- USFWS List of Federal Endangered and Threatened Species (USFWS 2020b)
- eBird Online Database (eBird 2020)
- CDFW Publication, California Bird Species of Special Concern in California (Shuford and Gardali 2008)
- CDFW and University of California Press publication California Amphibian and Reptile Species of Special Concern (Thomson et al. 2016)
- A Field Guide to Western Reptiles and Amphibians (Stebbins 2003)
- A Manual of California Vegetation, 2nd Edition (Sawyer et al. 2009)
- A Manual of California Vegetation Online (CNPS 2020b)
- Preliminary Descriptions of the Terrestrial Natural Communities (Holland 1986)
- California Natural Community List (CDFW 2018a)

- Natomas Basin Habitat Conservation Plan (City of Sacramento 2003)

Database searches (i.e., CNDDB, CNPS) focused on the geographic extent of the Study Area and the surrounding five miles for special-status plants and wildlife. Figures 2 and 3 in Appendix A contains occurrences of special-status species documented within a five-mile radius of the Study Area.

Following the remote assessment, WRA biologists completed a field review over the course of three days to document: (1) land cover types (e.g., vegetation communities, aquatic resources), (2) potential for the Study Area to provide suitable habitat for any special-status plant or wildlife species, (3) potential for the Study Area to support wetlands, and other potential constraints such as trees subject to local ordinances and (4) to document special-status species if detectable and present[3].

3.1 Vegetation Communities and Other Land Cover Types

During the site visit, WRA evaluated the species composition and area occupied by distinct vegetation communities, aquatic communities, and other land cover types. Sensitive land cover types were mapped at a coarse level. Mapping of these classifications utilized a combination of aerial imagery and field surveys. In most instances, communities are characterized based on distinct shifts in plant assemblage (vegetation), and follow the California Natural Community List (CDFW 2018b), *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986), and *A Manual of California Vegetation, Online Edition* (CNPS 2020b). These vegetation manuals do not describe every potential vegetation assemblage in California, and so in some cases, it is necessary to identify other appropriate vegetative classifications based on best professional judgment of WRA biologists. When undescribed variants are used, it is noted in the description. Vegetation alliances (natural communities) with a CDFW Rank of 1 through 3 ((globally critically imperiled (S1/G1), imperiled (S2/G2), or vulnerable (S3/G3)), were evaluated as sensitive as part of this evaluation.

The Study Area was assessed for the potential presence of wetlands and other aquatic resources based on the methods described in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* ("Corps Manual"; Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West* ("Arid West Supplement"; Corps 2008), and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008). Areas meeting these indicators were mapped at an assessment level as aquatic resources and categorized using the vegetation community classification methods described above where possible. Aquatic communities which are mapped in the NMFS Essential Fish Habitat Mapper (NMFS 2020), or otherwise meet criteria for designation as Essential Fish Habitat are indicated as such in the community description below in Section 5.1. The presence of riparian habitat was evaluated based on woody plant species meeting the definition of riparian provided in *A Field Guide to Lake and Streambed Alteration Agreements, Section 1600-1607, California Fish and Game Code* (CDFG 1994) and based on best professional judgement of biologists completing the field surveys.

[3] Due to the timing of the assessment, it may or may not constitute protocol-level species surveys; see Section 4.2 if the site assessment would constitute a formal or protocol-level species survey.

3.2 Special-status Species

3.2.1 General Assessment

Potential occurrence of special-status species in the Study Area was evaluated by first determining which special-status species occur in the vicinity of the Study Area through a literature and database review as described above. Presence of suitable habitat for special-status species was evaluated during the site visit(s) based on physical and biological conditions of the site, as well as the professional expertise of the investigating biologists. The potential for each special-status species to occur in the Study Area was then determined according to the following criteria:

- No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

- Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

- Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

- High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

- Present. Species is observed on the site or has been recorded (i.e. CNDDB, other reports) on the site in the recent past.

If a more thorough assessment was deemed necessary, a targeted or protocol-level assessment may be recommended as a future study. If a special-status species was observed during the site visit, its presence was recorded and discussed below in Section 5.2. If designated critical habitat is present for a species, the extent of critical habitat present and an evaluation of critical habitat elements is provided as part of the species discussions below.

3.2.2 Special-status Plants

A general assessment for special-status plants was conducted within the Study Area June 22 through 24, 2020. The survey assessed the habitat within the Study Area to determine if any special-status plants have the potential to occur.

To determine the presence or absence of special-status plant species determined to have potential and that were identifiable in the month of June, those species were searched for during the assessment site visits June 22 through June 24, 2020. The field surveys were conducted by botanists familiar with the flora of Sacramento and surrounding counties.

3.2.3 Special-status Wildlife

The study evaluated the likelihood for each special-status species wildlife species to be present in Study Area based on the suitability of habitat observed (Appendix C). No special field studies (e.g. protocol level) were conducted as part of this study. As such, any conclusions reached as to presence and absence of a special status species may be subject to modification should new information become available.

To the extent possible, the study also evaluated an approximately 200-foot to 0.5-mile area surrounding the Study Area, depending on the species, in order to comply with applicable NBHCP requirements. Where NBHCP requirements are not applicable, evaluations were limited to the Study Area, as previously described.

3.3 Wildlife Corridors and Native Wildlife Nursery Sites

To account for potential impacts to wildlife movement/migratory corridors, biologists reviewed maps from the California Essential Connectivity Project (CalTrans 2010), and habitat connectivity data available through the CDFW Biogeographic Information and Observation System (BIOS). Additionally, aerial imagery (Google 2018) for the local area was referenced to assess if local core habitat areas were present within, or connected to the Study Area. This assessment was refined based on observations of on-site physical and/or biological conditions, including topographic and vegetative factors that can facilitate wildlife movement, as well as on-site and off-site barriers to connectivity.

The potential presence of native wildlife nursery sites is evaluated as part of the site visit and discussion of individual wildlife species below. Examples of native wildlife nursery sites include nesting sites for native bird species (particularly colonial nesting sites), marine mammal pupping sites, and colonial roosting sites for other species (such as for monarch butterfly).

4.0 ECOLOGICAL SETTING

The Study Area includes 38 discrete areas located throughout the City of Sacramento. These areas are generally located east of Interstate 5/Highway 70, west of Watt Avenue, south of West Elkhorn Boulevard, and north of Cosumnes River Boulevard. The Study Area includes all areas affected by the Project, as well as a 100-foot buffer, excluding some lateral subsurface pipes. Additional details of the local setting are below.

4.1 Soils and Topography

The overall topography of the Study Area is flat with elevations ranging from approximately 30 to 60 feet above sea level. According to the *Soil Survey of Sacramento County* (USDA 1993; CSRL 2020), the Study Area is underlain by 26 soil mapping units; Table 2 below lists each soil mapping unit and indicates the Study Area which contains that soil unit. The parent soil series of all the Study Area's mapping units are summarized below.

Table 2. Soil Mapping Units within the Study Area

Soil Mapping Unit	Well Site
Bruella sandy loam, 0 to 2 percent slopes	22, 32
Clear Lake clay, hardpan substratum, drained, 0 to 1 percent slopes	19, 20
Columbia sandy loam, drained, 0 to 2 percent slopes	24
Cosumnes silt loam, drained, 0 to 2 percent slopes	23
Cosumnes silt loam, partially drained, 0 to 2 percent slopes	15, 39
Cosumnes-Urban land complex, partially drained, 0 to 2 percent slopes	15
Durixeralfs, 0 to 1 percent slopes	13
Egbert clay, partially drained, 0 to 2 percent slopes	2
Galt clay, 0 to 2 percent slopes	14
Galt-Urban land complex, 0 to 2 percent slopes	1
Madera loam, 0 to 2 percent slopes	12, 37
Madera-Galt complex, 0 to 2 percent slopes	11
Pits	7, 35
Riverwash	5
Rossmoor-Urban land complex, 0 to 2 percent slopes	5, 6, 38
San Joaquin fine sandy loam, 0 to 3 percent slopes	17, 22, 26, 28
San Joaquin silt loam, 0 to 3 percent slopes	3, 37
San Joaquin silt loam, leveled, 0 to 1 percent slope	37
San Joaquin-Durixeralfs complex, 0 to 1 percent slopes	9
San Joaquin-Galt complex, leveled, 0 to 1 percent slopes	14
San Joaquin-Urban land complex, 0 to 2 percent slope	1, 2, 3, 4, 8, 16, 33, 35
San Joaquin-Urban land complex, 0 to 3 percent slopes	10, 21, 26, 27, 29, 30, 31
Urban land	24, 25, 31, 34
Water	39
Xerarents-San Joaquin complex, 0 to 1 percent slopes	9, 17, 36
Xerarents-Urban land-San Joaquin complex, 0 to 5 percent slopes	8

4.2 Climate and Hydrology

The Study Area is located in the southern portion of the Sacramento Valley. The average monthly maximum temperature in the area is 73 degrees Fahrenheit, while the average monthly minimum temperature is 49 degrees Fahrenheit. Predominantly, precipitation falls as rainfall between November and March with an annual average precipitation of 18 inches (WRCC 2020).

Regional watersheds within the Study Area include Cache Slough-Sacramento River (HUC 8: 180-20-163), Lower American River (HUC 8: 180-20-111), and Auburn Ravine-Coon Creek (HUC 8: 180-20-161). Several blue-line streams are present within or immediately adjacent to the Study Area (USGS 2018). Several mapped resources in the National Wetlands Inventory (NWI; USFWS 2020a), and California Aquatic Resources Inventory (CARI; SFEI 2020) are situated in the Study Area. Detailed descriptions of aquatic resources are provided in Section 5.1 below.

4.3 Land-use

The majority of the Study Area is landscaped or maintained vegetation of City parks or schools and/or developed with City infrastructure. Undeveloped areas consist of ruderal vegetation or non-native grassland in un-developed City lots. Detailed plant community descriptions are included in Section 5.1 below, and all observed plants are included in Appendix B. Surrounding land uses include residential and industrial (Google Earth 2020). Historically, the Study Area was developed for agriculture (Historic Aerials 2020).

5.0 ASSESSMENT RESULTS

5.1 Vegetation Communities and Other Land Cover

WRA observed seven land cover types within the Study Area: developed, landscaped, non-native grassland, seasonal wetlands, drainage canals, ditch, and artificial pond. Sensitive land cover types within the Study Area are illustrated in Figure 4 (Appendix A). The non-sensitive land cover types in the Study Area include non-native grasslands, landscaped and developed areas, and artificial pond, while the sensitive communities include the streams (drainage canals and ditches) and seasonal wetlands.

Table 3. Sensitive Land Cover Types

COMMUNITY/LAND COVERS	SENSITIVE STATUS	RARITY RANKING	WELL SITES WITH SENSITIVE LAND COVER TYPES
Aquatic Resources			
Seasonal wetland	Sensitive	N/A	2, 13, 12, 28, 29, 30, 37
Drainage Canal	Sensitive	N/A	24, 30, 39
Ditch	Sensitive	N/A	2, 28

5.1.1 Terrestrial Land Cover

Developed Area (no vegetation alliance). CDFW Rank: None. Developed areas include areas which are paved or have structures. If planted trees are immediately adjacent to the paved areas, these are included within developed areas. Developed areas include parking lots, access roads and structures within the Study Area. Vegetation in developed areas includes planted native and non-native trees. Generally the trees are young and small with little to somewhat developed canopy.

Landscaped Area (no vegetation alliance). CDFW Rank: None. Landscape areas include areas which are dominated by vegetation which is regularly maintained. Landscaped areas include City parks, fields at City schools, and vegetated median strips within City roads. Vegetation within the landscaped areas include mowed fields of turf grasses dominated by Bermuda grass (*Cynodon dactylon*), dallis grass (*Paspalum dilatatum*), and bluegrass (*Poa* spp.). Associated species include white clover (*Trifolium repens*), ribwort (*Plantago lanceolata*), common plantain (*Plantago major*), and common purslane (*Portulaca oleracea*). Landscaped areas also include planted and/or natural stands of native and non-native trees. Native trees observed included valley oak (*Quercus lobata*), blue oak (*Quercus douglasii*), California sycamore (*Platanus racemosa*), and interior live oak (*Quercus wislizenii*). The trees ranged from saplings to mature. Non-native trees observed in landscaped areas included but are not limited to black locust (*Robinia pseudoacacia*), crape myrtle (*Lagerstroemia indica*), Chinese pistache (*Pistacia chinensis*), and London plane (*Platanus* x *racemosa*).

Non-native grassland (Wild Oats Grassland-*Avena* spp. Herbaceous Semi-Natural Alliance). CDFW Rank: None. Non-native grasslands are present within many of the Well Sites, occurring in undeveloped and unmaintained locations. These non-native grasslands vary in species composition, but are commonly dominated by slim oat (*Avena barbata*) and generally best fit the Wild Oats Grassland Alliance (CNPS 2020b). The vegetation is dominated by slim oat and other non-native grasses, including Bermuda grass, ripgut brome (*Bromus diandrus*), Italian ryegrass (*Festuca perennis*), and downy chess (*Bromus tectorum*). Associated species include wild lettuce (*Lactuca saligna*), filaree (*Erodium* spp.), field bindweed (*Convolvulus arvensis*), short-podded mustard (*Hirschfeldia incana*), cheese weed (*Malva parviflora*), and

willow herb (*Epilobium brachycarpum*). Many of these areas were mowed or disked prior to the field work, which is likely an annual or biannual occurrence.

5.1.2 Aquatic Resources

Seasonal Wetland (Perennial ryegrass fields-*Festuca perennis* Herbaceous Semi-Natural Alliance; Creeping ryegrass turf-*Elymus triticoides* Herbaceous Alliance). CDFW Rank: Italian ryegrass fields: No Rank; Creeping ryegrass turf: G3 S3. Seasonal wetlands occur in areas where the soil is saturated for a duration sufficient to support hydrophytic vegetation; saturated conditions are generally absent during the dry season. Several potential seasonal wetlands are present within the Study Area; most seasonal wetlands within the Study Area best fit the Perennial Ryegrass Field alliance. One location (Well 28) also contains a seasonal wetland which best fits the Creeping Ryegrass Turf alliance. Within the Study Area, seasonal wetlands occur in depressions on areas of compacted soil or in ditches which show no indications of flow. Typical vegetation within the perennial ryegrass wetlands includes Italian ryegrass, barley (*Hordeum marinum*), hood canary grass (*Phalaris paradoxa*), smartweed (*Persicaria* sp.), tall cyperus (*Cyperus eragrostis*), hyssop loosetrife (*Lythrum hyssopifolia*), toad rush (*Juncus bufonius*), curly dock (*Rumex crispus*), and bristly ox-tongue (*Helminthotheca echioides*). The creeping ryegrass wetland is dominated by creeping ryegrass. Indicators of hydric soils and wetland hydrology were observed in areas mapped as seasonal wetland. Section 7 provides an analysis of impacts and mitigation measures for these sensitive features.

Drainage canal (no vegetation alliance). CDFW Rank: None. Several sites (24, 30, and 39) are located within 100-feet of drainage canal. Drainage canals within the Study Area are man-made channels with earthen or concrete bottoms which appear to be re-routed channels. These features contain an obvious bed and bank and contain indicators of OHWM. Drainage canals observed in the Study Area ranged between 10 and 30-feet wide between top-of-bank (TOB), and the beds ranged between 4 and 10 feet wide between OHWMs. No or very little herbaceous vegetation is present within the TOB of the concrete-lined canals. Vegetation within the TOB of drainage canals with earthen bottoms was generally herbaceous and occasionally mowed. Generally, a narrow band of stream-fringe vegetation is present along the OHWM within the TOB, dominated by hydrophytic species such as tall nutsedge, western goldenrod (*Euthamia occidentalis*), and Italian ryegrass; above the OHWM, vegetation is dominated by ruderal species, including milk thistle (*Silybum marinum*), ripgut brome, yellow star thistle (*Centaurea solstitialis*), and filaree. Patches of water primrose (*Ludwigia* sp.) and mosquito fern (*Azolla* sp.) occur as floating vegetation in some of the features. Woody shrubs and trees if present, appeared to be planted ornamental or native trees. Section 7 provides an analysis of impacts and mitigation measures for these sensitive features.

Ditch (no vegetation alliance). CDFW Rank: None. Ephemeral ditches are located in the Study Area at Well Sites 2 and 28. These features capture surface flow and convey the water to a larger nearby conveyance. The ditch is vegetated and no indication of flow was observed. The TOB of the features was approximately 5-6 feet wide while the OHWM is approximately 2-3 feet wide. Hydrophytic vegetation, dominated by Italian ryegrass is present within the OHWM. Weedy upland species are present above the OHW line to the TOB. Section 7 provides an analysis of impacts and mitigation measures for these sensitive features.

Pond (no vegetation alliance). CDFW Rank: None. An artificially created ornamental pond is present at one site (Well 35). The TOB of the pond is dominated by non-native grassland and planted trees, which are maintained. A small patch of cattail (*Typha* sp.) is present within the pond in the Study Area. This

feature was absent in 1966 aerial imagery (Historic Aerials 2020) and is not currently mapped by USFWS nor CARI (NWI 2020; SFEI 2020) and is not considered a sensitive resource.

5.2 Special-status Species

5.2.1 Special-status Plants

Based upon a review of the resource databases listed in Section 4.0, including the NBHCP, 23 special-status plant species have been documented in the vicinity of the Study Area. Seven of these plants have the potential to occur in the Study Area. The remaining species documented from the greater vicinity are unlikely or have no potential to occur for one or more of the following:

- Hydrologic conditions (e.g., perennial wetlands, vernal pools) necessary to support the special-status plant species are not present in the Study Area;
- Edaphic (soil) conditions (e.g., alkaline soils) necessary to support the special-status plant species are not present in the Study Area;
- Associated natural communities (e.g., perennial marsh, vernal pool) necessary to support the special-status plant species are not present in the Study Area;
- The Study Area is geographically isolated by surrounding development from the documented range of the special-status plant species;
- The historical landscape and/or habitat(s) of the Study Area were not suitable habitat prior to land/type conversion to support the special-status plant species;
- Land use history and contemporary management (e.g., grading, mowing, pesticide use) has degraded the localized habitat necessary to support the special-status plant species.

WRA biologists conducted assessment level surveys during a period sufficient to identify two of the seven special-status plant species with the potential to occur: pappose tarplant (*Centromadia parryi* ssp. *parryi*) and Pary's rough tarplant (*Centromadia parryi* ssp. *rudis*). These two species have peak blooming periods within the month of June and would be identifiable if present. No special-status species were observed during the June site visit. The remaining species with potential habitat in the Study Area are summarized below.

Table 4. Potential Special-status Plants

Scientific Name	Common Name	Conservation Status	Well Sites with Habitat on or Nearby
Formally Listed Plants (FESA, CESA, CNPPA)			
No formally listed plants have the potential to occur			
Other Special-status Plants (CEQA, other)			
Brodiaea rosea ssp. *vallicola*	valley brodiaea	Rank 4	7, 11, 12, 13, 15, 20, 21, 24, 28, 31, 32
Downingia pusilla	Dwarf downingia	Rank 2B	12, 37

Scientific Name	Common Name	Conservation Status	Well Sites with habitat on or nearby
Fritillaria agrestis	stinkbells	Rank 4	7, 11, 12, 13, 15, 20, 21, 24, 28, 31, 32
Navarretia eriocephala	hoary navarretia	Rank 4	7, 11, 12, 13, 15, 20, 21, 24, 28, 31, 32
Trifolium hydrophilum	saline clover	Rank 1B	7, 11, 12, 13, 15, 20, 21, 24, 28, 31, 32

Valley brodiaea (*Brodiaea rosea* ssp. *vallicola*). Rank 4. Moderate Potential. Valley brodiaea is a bulbiferous perennial forb in the brodiaea family (Themidaceae) that blooms from April through May. It typically occurs in swales in valley and foothill grassland and vernal pools in the eastern portion of the Sacramento valley at elevations ranging from 5 to 245 feet (CNPS 2020a). Known associated species include medusa head (*Elymus caput-medusea*), soft chess (*Bromus hordeaceus*), rattail grass (*Festuca myuros*), hawkbit (*Leontodon saxatilis*), rose clover (*Trifolium hirtum*), big heron bill (*Erodium botrys*), Italian ryegrass (*Festuca perennis*), and tarplant (*Holocarpha virgata*) (CCH 2020). This species has the potential to occur in non-native grasslands present within the Study Area.

Dwarf downingia (*Downingia pusilla*), Rank 2B.2. Moderate Potential. Dwarf downingia is annual forb in the harebell family (Campanulaceae) that blooms from March to May. It typically occurs on slightly acidic clay to clay loam mesic areas on the edge of vernal pools and lakes in valley and foothill grassland at elevations ranging from 3 to 1450 feet (CNPS 2020a). This species is an obligate (OBL) wetland plant (Lichvar et al. 2016), and is regularly known from vernal pool habitat, but may occur in other wetland habitat types. Known associated species include maroon spot calico flower (*Downingia concolor*), California goldfields (*Lasthenia californica*), California oat grass (*Danthonia californica*), semaphore grass (*Pleuropogon californicus*), annual hairgrass (*Deschampsia danthonioides*), barleys (*Hordeum* spp.), Italian ryegrass, rattlesnake grasses and docks (*Rumex crispus, R. pulcher*) (CDFW 2020a). This species has a moderate potential to occur in depressional seasonal wetlands observed at Well Sites 12, and 37 due to the presence of associated species and enclosed depressional wetlands.

Stinkbells (*Fritillaria agrestis*). Rank 4. Moderate Potential. Stinkbell is a bulbiferous perennial forb in the lily family (Liliaceae) that blooms from March to June. It typically occurs on clay soils, sometimes derived from serpentine, in grassy areas, occasionally near vernal pools, within cismontane woodland, chaparral, pinyon and juniper woodland, and valley and foothill grassland habitat at elevations ranging from 30 to 5055 feet (CNPS 2020a). This species is a facultative (FAC) plant (Lichvar 2016), but has no vernal pool indicator status (Keeler-Wolf et al. 1998). Known associated species include ripgut brome, soft chess, Italian rye grass, and fillarees (CCH 2020). This species has the potential to occur in non-native grassland present within the Study Area.

Hoary navarretia (*Navarretia eriocephala*). Rank 4. Moderate Potential. Hoary navarretia is an annual herb in the phlox family (Polemoniaceae) that blooms from May to June. It typically occurs in vernally mesic cismontane woodland and valley and foothill grassland at elevations ranging from 340 to 1,310 feet (CNPS 2016a). This species is a facultative wetland plant (Lichvar et al. 2016) and is a vernal pool generalist (Keeler-Wolf et al. 1998). Known associated species include blue oak, manzanitas (*Arctostaphylos* spp.), oats (*Avena* spp.), Italian ryegrass, bromes (*Bromus* spp.), filarees, adobe navarretia (*Navarretia nigelliformis*), marigold navarretia (*N. tagetina*), June grass (*Koeleria macrantha*), and yellow starthistle (CCH 2020). This species has the potential to occur in non-native grassland present within the Study Area.

Saline clover (*Trifolium hydrophilum*). Rank 1B. Moderate Potential. Saline clover is an annual herb in the pea family (Fabaceae) that blooms from April to June. It typically occurs in mesic, alkali sites in marsh, swamp, valley and foothill grassland, and vernal pool habitat at elevations ranging from 0 to 980 feet (0 to 300 meters) (CDFW 2020a, CNPS 2020a). This species is a facultative plant (Lichvar et al. 2016). Known associated species include semaphore grass (*Pleuropogon californicus*), salt grass (*Distichlis spicata*), Italian rye grass, brass buttons (*Cotula coronopifolia*), calico flowers (*Downingia* spp.), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), hyssop loosestrife, toad rush, California oat grass (*Danthonia californica*), purslane speedwell (*Veronica peregrina* ssp. *xalapensis*), meadow barley (*Hordeum brachyantherum*), clovers (*Trifolium microdon*, *T. wormskioldii*, *T. fucatum*), and sand spurry (*Spergularia macrotheca*) (CDFW 2020a). This species has potential to occur in seasonal wetlands within the Study Area.

5.2.2 Special-status Wildlife

No Critical Habitat, EFH or Wildlife Corridors were identified as occurring in the Study Area during this assessment. Potentially suitable habitat for Valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*) exists on two Well Sites. Potential habitat for vernal pool fairy shrimp is present on Well Sites containing wetlands and ditches. All of the Well Sites have potential to support one or more species of nesting bird. Swainson's hawk has potential to nest in the Study Area and its vicinity, as do burrowing owls. Well Sites have potential to support day roosting bats where trees are present, however trees in the Well Sites are not large enough to support maternity roosts for bats. No buildings or trees that would support maternity roosts would be removed or demolished as part of the Project.

Of the special-status wildlife species documented in the vicinity of the Study Area, most are excluded from the majority of the Study Area based on a lack of habitat features and the position of the Study Area in an urban environment that precludes access to the majority of the individual Well Sites. Features not found within the Study Area that are required to support special-status wildlife species include:

- Suitable perennial aquatic habitat (e.g. streams, rivers or ponds) with suitable surrounding upland habitat (e.g. areas with animal burrows)
- Tidal Marsh areas
- Caves, mine shafts, or abandoned buildings
- Extensive grasslands
- Cut banks, riparian jungles, extensive emergent vegetation etc. to support nesting

The absence of such habitat features eliminates components critical to the survival or movement of most special-status species found in the vicinity. For instance, giant garter snake (*Thamnophis gigas*) is documented to historically occur in the vicinity of several parts of the Study Area. However, suitable aquatic habitat and movement corridors connecting the Study Area to source populations are absent, precluding this species from existing on the Study Area.

Six special-status species have potential to occur in the immediate vicinity of or in portions of the Study Area: Valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*), vernal pool fairy shrimp (VPFS; *Branchinecta lynchi*), white-tailed kite (*Elanus leucurus*), loggerhead shrike (*Lanius ludovicianus),* burrowing owl (*Athene cunicularia*), and Swainson's hawk (SWHA; *Buteo swainsonii*).

Native birds protected under the MBTA and CFGC may nest within the Study Area during nesting season (February 1 – August 31). Additionally, Swainson's hawk and burrowing owl are unlikely to nest within the majority of the Study Area, but may nest within 0.25 mile of the Study Area and a few sites may support nesting. Species not documented in the close vicinity of the Study Area and determined to be unlikely or have no potential to occur there are not discussed further, except as required by the NBHCP. Species and habitats evaluated in or immediately outside of the Study Area or species that have not been documented in the close vicinity of the Study Area but require discussion by the NBHCP are discussed below.

Table 5. Potential Special-status Wildlife

Scientific Name	Common Name	Conservation Status	Well Sites with Habitat on or Nearby
Formally Listed Wildlife (FESA, CESA)			
Branchinecta lynchi	vernal pool fairy shrimp	FT	Well Sites 2, 12, 13, 28, 29, 30, 37 have potential wetlands or other features onsite that may be suitable for VPFS.
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	FT	Well Sites 38 and 24 have *Sambucus*, the host plant for VELB.
Buteo swainsonii	Swainson's Hawk	ST	Suitable habitat is present within some sites and is located within 0.25 miles of all sites.
Other Special-status Wildlife (CEQA, other)			
Athene cunicularia	burrowing owl	SSC	This species has numerous documented occurrences in the vicinity of the Study Area and some sites contain burrows.
Lanius ludovicianus	loggerhead shrike	SSC	This species has been documented in the vicinity of the Study Area and may nest there.
Elanus leucurus	white-tailed kite	CFP	This species has been documented in the vicinity and may nest in trees and shrubs if they are available.

Vernal pool fairy shrimp (*Branchinecta lynchi*), Federal Threatened Species. No Potential/ Unlikely in Most Well Sites. Moderate Potential at Well Sites 2, 12, 13, 28, 29, 30 and 37. The vernal pool fairy shrimp is widespread but not abundant; populations are known from Stillwater Plain in Shasta County through most of the length of the Central Valley to Pixley in Tulare County (additional disjunct populations exist at various locations throughout state). Vernal pool fairy shrimp occupy a variety of different vernal pool habitats, from small, clear sandstone rock pools to large, turbid, alkaline, grassland valley floor pools.

Within the Study Area, Well Sites 2, 12, 13, 28, 29, 30, 37 have potential to support VPFS. While most of these sites do not have connectivity to documented occurrences of the species, their presence cannot be ruled out without additional study.

Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*), Federal Threatened Species. Unlikely or No Potential at most Well Sites. Moderate Potential in Well Sites 38 and 24. This beetle is found throughout the Central Valley in elderberry (*Sambucus sp*.) shrubs, on which it is completely

dependent for larval development, and to a lesser degree, adult feeding. Typical habitat is characterized as large stands of mature elderberry shrubs in riparian or floodplain areas.

Within the Study Area, only two of the Well Sites, 24 and 38, were found to support *Sambucus*. Neither of these plants were found to contain evidence of VELB. However, at sites where *Sambucus* is present, VELB may be present.

Swainson's hawk (*Buteo swainsoni*). State Threatened. Moderate Potential. Swainson's hawk is a summer resident and migrant in California's Central Valley and scattered portions of the southern California interior. Areas typically used for nesting include the edges of narrow bands of riparian vegetation, isolated patches of oak woodland, lone trees, and also planted and natural trees associated with roads, farmyards, and sometimes adjacent residential areas. Foraging occurs in open habitats including grasslands, open woodlands, and agricultural areas. Swainson's hawk is not uncommon in the lower Sacramento Valley in locations where nest trees and foraging habitat are present.

There are trees within or adjacent to the Well Sites that could support nesting by Swainson's hawk and documented occurrences are present near several of the Well Sites and prevalent in the Sacramento area. All the Well Sites have potentially suitable nesting trees within 0.25 miles, though many of these have reduced potential to support the species due to their context in the urban setting and other factors. The entire Study Area is within foraging distance of suitable feeding areas. The foraging quality in most of the Study Area itself is diminished due to the majority of it being developed and managed, though a few of the Well Sites may occasionally be visited by foraging Swainson's hawk.

Burrowing owl (*Athene cunicularia*). CDFW Species of Special Concern. Unlikely at Most Well Sites, Moderate in the Vicinity. Burrowing owl occurs as a year-round resident and winter visitor in much of California's lowlands, inhabiting open areas with sparse or non-existent tree or shrub canopies. Typical habitat is annual or perennial grassland, although human-modified areas such as agricultural lands and airports are also used. This species is dependent on burrowing mammals to provide the burrows that are characteristically used for shelter and nesting, and in northern California, it is typically found in close association with California ground squirrels (*Otospermophilus beecheyi*). Manmade substrates such as pipes or debris piles may also be occupied in place of burrows.

No burrowing owls were observed within the Study Area. Burrows or burrow analogues were seen at Well Sites 7, 13, and 16. Wells 19, 20 and 28 have small culverts near the potential work areas that could be used by burrowing owls. Additional structures that may support burrowing owls are located outside the Study Area, but within its vicinity.

Loggerhead shrike (*Lanius ludovicianus*). CDFW Species of Special Concern. Unlikely or Moderate Potential in the Study Area. The loggerhead shrike is a year-round resident and winter visitor in lowlands and foothills throughout California. This species is associated with open country with short vegetation and scattered trees, shrubs, fences, utility lines and/or other perches. Although they are songbirds, shrikes are predatory and forage on a variety of invertebrates and small vertebrates. Captured prey items are often impaled for storage purposes on suitable substrates, including thorns or spikes on vegetation, and barbed wire fences. Loggerhead shrike nests in trees and large shrubs and nests are usually placed three to ten feet off the ground (Shuford and Gardali 2008).

The majority of the Study Area provides only marginal habitat for the species to nest and forage. Because potentially suitable habitat is present and the species has been documented in the region, the species has potential to occur and nest.

Giant garter snake (GGS; *Thamnophis gigas*). State Threatened, Federal Threatened, NBHCP species. Unlikely at Well Sites 19 and 39. No Potential at Remaining Well Sites. This endemic species of snake is found only in the Sacramento and San Joaquin Valleys. The giant garter snake prefers freshwater marshes and low gradient streams but has adapted to drainage channels and irrigation ditches. The giant garter snake inhabits agricultural wetlands and other waterways such as irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands in the Central Valley.

Though GGS is assessed as unlikely to occur, it is discussed further here because of its listed status and its inclusion in the NBHCP. Within the Study Area, there are no sites that have suitable habitat that have connectivity to populations that are presumed extant. Well Site 19 is located near an occurrence that is presumed to be extant but there is no suitable aquatic habitat onsite and the terrestrial areas lack refugia. Rip-rap and aquatic habitat adjacent to the site may potentially support GGS. This Well Site is within 200 feet of potentially occupied habitat and is within the NBHCP area.

Well Site 39 has an occurrence for GGS within it, but the area is developed, lacking suitable habitat, and the CNDDB description of the occurrence is "possibly extirpated", as are the majority of the occurrences in the Study Area's vicinity.

The remainder of the Study Area either does not contain suitable habitat to support this species and/or is separated from other suitable habitat by urban development, roadways, and disked fields. There is no suitable habitat for this species within 200 feet of the majority of the Study Area. Additionally, giant garter snake occurrences that are near Well Sites in the rest of the NBHCP are considered possibly extirpated, including the occurrences in closest proximity to the Study Area, (CDFW 2020). Land use changes in the vicinity have eliminated suitable habitat.

NBHCP Species Outside of the Study Area

The following buffers were evaluated for species covered under the NBHCP (Well Sites 15, 19, 20, 23, and 39) except when assessment would require entering properties where access was not granted:

- A 250-foot area surrounding the Study Areas within the NBHCP area was evaluated to determine whether any vernal pools, swales, or other seasonal wetlands capable of supporting vernal pool-associated species such as vernal pool fairy shrimp (*Branchinecta lynchi*), midvalley fairy shrimp (*B. mesovallensis*), vernal pool tadpole shrimp (*Lepidurus packardi*), western spadefoot toad (*Spea hammondii*), and California tiger salamander (*Ambystoma californiense*) were present. The 250-foot surrounding areas are either developed, have been disked or otherwise disturbed in such a way that no wetland features that would support vernal pool-associated species would be present.
- No Elderberry (*Sambucus* spp.) shrubs, the host plant for VELB, were observed at Well Sites subject to the NBHCP. However, Well Site 23 is within 1000 feet of riparian habitat that could support elderberry.
- No tricolor blackbird (*Agelaius tricolor*) nesting habitat was observed within 500 feet of the Study Area within the NBHCP area. .

- No Aleutian Canada geese (*Branta canadensis leucopareia*) were observed within the Study Area within the NBHCP area. .
- No white-faced ibis (*Plegadis chihi*) nesting habitat was observed within 0.25 mile of the Study Area within the NBHCP area.
- Loggerhead shrike (*Lanius ludovicianus*) nesting habitat was observed within 100 feet of the Study Area within the NBHCP area.
- No bank swallow (*Riparia riparia*) nesting habitat was observed within 250 feet of the Study Area within the NBHCP area.

5.3 Wildlife Corridors and Native Wildlife Nursery Sites

The Study Area is not within a designated wildlife corridor (CalTrans 2010). The site is located within a highly urbanized landscape. While common wildlife species presumably utilize the site to some degree for movement at a local scale, the Study Area itself does not provide corridor functions for most species and the limited scale of each Well Site further reduces the potential for these areas to play a significant role for wildlife transit. There is no Essential Fish Habitat or designated Critical Habitat within the Study Area. Well Site 39 has nearby nesting herons and egrets. Heron and egret nest sites are protected from disturbance that could result in nest failure or abandonment while active.

6.0 ANALYTICAL METHODOLOGY AND SIGNIFICANCE THRESHOLD CRITERIA

Pursuant to Appendix G, Section IV of the State CEQA Guidelines, a project would have a significant impact on biological resources if it would:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or,

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

These thresholds were utilized in completing the analysis of potential project impacts for CEQA purposes. For the purposes of this analysis, a "substantial adverse effect" is generally interpreted to mean that a potential impact could directly or indirectly affect the resiliency or presence of a local biological community or species population. Potential impacts to natural processes that support biological communities and special-status species populations that can produce similar effects are also considered potentially significant. Impacts to individuals of a species or small areas of existing biological communities may be considered less than significant if those impacts are speculative, beneficial, *de minimis*, and/or would not affect the resiliency of a local population.

7.0 IMPACTS AND MITIGATION EVALUATION

Using the CEQA analysis methodology outlined in Section 6.2 above, the following section describes potential significant impacts to sensitive resources within the Well Site as well as suggested mitigation measures which are expected to reduce impacts to less than significant. Table 6 indicates the potential constraints that may be present at each Well Site.

Table 6. Potential Sensitive Communities, City Trees and Special Status-species Constraints by Well Site

Well Site	Rare Plants	Wetlands	Ephemeral Ditches and/or Canals	Nesting and Special-status Birds	Giant Garter Snake	Vernal Pool Fairy Shrimp	Valley Elderberry Longhorn Beetle	Natomas Basin HCP	City Trees
2		YES	YES	YES		YES			YES
3				YES					YES
4				YES					YES
5				YES					YES
6				YES					
7	YES			YES					YES
8				YES					YES
9				YES					YES
10				YES					
11	YES			YES					
12	YES	YES		YES		YES			
13	YES	YES		YES		YES			
14				YES					
15	YES			YES				YES	
16				YES					YES
17				YES					
18				YES					
19				YES	YES*			YES	
20	YES			YES				YES	
21	YES			YES					YES
22				YES					
23				YES				YES	YES
24	YES		YES	YES			YES		
25				YES					
26				YES					YES
27				YES					YES
28	YES	YES		YES		YES			
29		YES		YES		YES			
30		YES	YES	YES		YES			YES
31	YES			YES					
32	YES			YES					YES
33				YES					
34				YES					
35				YES					YES
36				YES					YES
37	YES	YES		YES		YES			
38				YES			YES		

39			YES	YES	YES*			YES	
Section with discussion of mitigation		7.2, 7.3, 7.5	7.2, 7.3, 7.5	7.1	*Unlikely to occur but surveys required due to NBHCP (7.6)	7.1	7.1	7.6	7.5

7.1 Special-status Species and Nesting Birds

This section analyzes the Project's potential impacts and mitigation for special-status species in reference to the significance threshold outlined in CEQA Appendix G, Part IV (a):

> *Does the project have the potential to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

Potential impacts and mitigation for potentially significant impacts are discussed below.

Special-Status Plant Species

Five special-status plant species have the potential to occur within non-native grassland habitat within the Study Area. As these species have peak blooming periods in April and May, presence or absence could not be determined during the June site visit and therefore the plants may potentially be present. As these species are considered special-status due to limited distribution within California and/or elsewhere, impacts to populations are considered a **potentially significant impact** under CEQA. None of the four species is "covered" under the Natomas Basin HCP.

> **Potential Impact Bio-1**: The Proposed Project may directly or indirectly impact special-status plant populations.

To reduce impacts to special-status plant populations to less than significant level, the following measures shall be implemented:

> **Mitigation Measure Bio-1:** Conduct protocol-level special-status plant surveys in April and May within areas of non-native grassland and suitable wetlands with potential to support special-status plants, specifically at Well Sites 7, 11, 12, 13, 15, 20, 21, 24, 28, 31, 32, and 37. The surveys shall be performed in accordance with those described by resource experts and agencies (CNPS 2001, CDFW 2018a, USFWS 1996). If individuals or populations are observed, they shall be mapped and notes regarding size of population, quality of habitat and potential threats taken. Populations shall be avoided to the greatest extent practical, with a recommended minimum 25-foot buffer from the edge of the population. Prior to Project activities within the vicinity of the populations, the population and associated 25-foot buffer shall be flagged or otherwise made visible. No work shall occur within that flagged area and personnel shall avoid entering the area to the greatest extent practical.

If avoidance of a population or individual is not practical, a Habitat Mitigation and Monitoring Plan (HMMP) shall be drafted for the species being impacted. The HMMP shall provide guidance for restoring, enhancing, and/or creating suitable habitat for the species being impacted, and shall also provide success criteria which will ensure success of mitigation efforts. Mitigation ratios shall be a minimum of 2:1 for either percent cover or number of individuals. The HMMP shall be final upon approval by the City of Sacramento and interested regulatory agencies.

Implementation of this mitigation measure will reduce potential impacts to special-status plants to a level that is less than significant.

Swainson's Hawk

Swainson's hawk is a CESA-listed raptor that regularly nests in the vicinity of the Study Area. No permanent loss of SWHA habitat is anticipated due to the Proposed Project. It is anticipated that in Well Sites where potential foraging habitat is present, this habitat will remain at approximately the same extent and quality after the Project. During construction of the Project, some areas may be temporarily disturbed and SWHA may avoid the active construction areas at that time. No nesting trees for SWHA would be removed for the Project. If SWHA nests near a Well Site and construction activities are sufficient to disturb the active nest to the extent that the active nest was abandoned, this abandonment would be considered "take" under CESA. If no impact avoidance or minimization measures are implemented, direct mortality to dependent young could occur to individual SWHA present in these areas during construction. Because SWHA are listed as threatened under CESA, take of individuals is considered a **significant impact** under CEQA.

Potential Impact BIO-2: The Proposed Project's construction activities in the Well Sites could result in take of State-threatened SWHA, which would be considered a significant impact.

To reduce potential impacts to SWHA to a less-than-significant level, the following measures shall be implemented:

Mitigation Measure BIO-2a: Initial ground disturbing activities will commence outside of the SWHA nesting season (March 1- September 15).

or

Mitigation Measure BIO-2b: If initial ground disturbing activities will commence during the SWHA nesting season (March 1- September 15), surveys based on CDFW's survey protocol shall be conducted. These surveys will include a pre-arrival assessment conducted between January 1 and March 1, to identify areas with suitable nesting sites within 0.25 miles of the Well Sites that will have activity in that year. The survey extent will include areas up to 0.5 miles for Well Sites located in the Natomas Basin Habitat Conservation Plan (NBHCP) area (Well Sites 15, 19, 20, 23 and 39). For Well Sites determined to have suitable nesting habitat within 0.25 miles or within 0.5 miles in the NBHCP area surveys will be conducted for SWHA nesting during the nest-building period (April 1-April 30) if work will begin between April 1 and May 30). For activities that will commence after June 1, surveys for active nests will be conducted between June 1 and August 1. Any active nests shall be avoided at a distance sufficient to ensure that nest abandonment will not occur and this distance shall be determined

through observation of the nest by a qualified biologist. Avoidance shall be maintained until dependent young are no longer present. Survey radius for these surveys shall be 0.25 miles except for sites within the NBHCP area, where survey radius shall extend 0.5 miles from the site.

Burrowing Owl

The Project may affect burrowing owl if present during Project development. Potential impacts to burrowing owl could occur during the removal of burrow-like structures. These activities could result in the direct removal or destruction of active nests or occupied refugia or may create audible, vibratory, and/or visual disturbances that cause birds to abandon active nests. Because burrowing owl are a CDFW SSC, harming a burrowing owl is a **potentially significant impact** under CEQA.

Potential Impact BIO-3: The Proposed Project's construction activities in the Well Sites could result in harm to burrowing owl, which would be considered a potentially significant impact.

To reduce potential impacts to burrowing owl to a less-than-significant level, the following measures shall be implemented:

Mitigation Measure BIO-3: An assessment survey for burrowing owls shall be conducted at all well sites by a qualified biologist in the year of construction, prior to the start of Project activities (vegetation removal, grading, or other initial ground-disturbing activities) regardless of time of year. The survey shall be conducted in a sufficient area around the Well Site to identify the location and status of any nests that could potentially be directly or indirectly affected by vegetation removal, or ground disturbing activities if these activities commence between February 1 and August 31, the timeframe that corresponds to the burrowing owl nesting season. If the results of the surveys indicate that burrowing owl may be impacted by project activities or if the Well Site is in the NBHCP area, the following measure shall apply:

- Preconstruction surveys in accordance with CDFW (CDFG) burrowing owl guidelines shall be conducted, summarized as: The Project Area and surrounding area (up to 500 feet if habitat has potential to support burrowing owl and no barriers preclude burrowing owls) shall be traversed on foot to detect burrowing owls. The survey will be conducted using transects spaced no more than 50 feet apart. For sites determined to have potential to support nesting burrowing owls, at least 3 site visits for burrowing owl shall occur between April 15 and July 15, with at least one site visit after June 15. Visits are to be at least 15 days apart.
- If any burrowing owl nest is identified during preconstruction surveys, the applicant shall comply with all CDFW guidelines regarding the minimization of impacts to the burrowing owl, including not disturbing an occupied nest during nesting season (February 1 through August 31) unless a qualified biologist approved by the Department verifies through noninvasive methods that either:
  (1) the owls have not begun egg-laying and incubation; or
  (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.
- Any owls identified in the preconstruction surveys shall be relocated to appropriate locations using passive relocation techniques approved by the CDFW and mitigation for impacts to

burrowing owl nests shall be provided and funded by the applicant in accordance with CDFW guidelines and requirements.

Valley elderberry longhorn beetle

The Project may affect VELB if present during Project development. Potential impacts to VELB could occur during the removal of its host plant, *Sambucus,* if occupied by VELB eggs, larvae or adult life stages. Because VELB are a Federal-threatened species, take of a VELB is a **significant impact** under CEQA.

> **Potential Impact BIO-4:** The Proposed Project's construction activities in the Well Sites could result in take of Federal-threatened VELB, which would be considered a significant impact.

To reduce potential impacts to VELB to a less-than-significant level, the following measures shall be implemented:

> **Mitigation Measure BIO-4:** Prior to initial ground disturbance, a survey for the valley elderberry longhorn beetle (VELB) host plant, *Sambucus*, will be conducted at all sites where *Sambucus* has been detected (Well Sites 38 and 24) and all sites within the NBHCP. *Sambucus* plants, if detected, shall be avoided by at least 20 feet from the dripline of the plant and this avoidance buffer shall be clearly demarcated using lathe and flagging. If *Sambucus* plants with a stem diameter of greater than 1 inch cannot be avoided, they shall be inspected for evidence of VELB presence and if any evidence of VELB is detected, the plants shall be avoided and consultation with the USFWS shall occur to determine next steps, which may include relocation of the plant. If the Well Site where the *Sambucus* is located in the NBHCP, new consultation would not be required, but removal of *Sambucus* shall be conducted and mitigated for in accordance to the NBHCP.

Vernal Pool Fairy Shrimp (VPFS)

VPFS is a broad-ranging federal-listed vernal pool crustacean that occurs in wetlands, vernal pools and man-made features such as ditches. VPFS can occupy pools that contain water for around 3-4 weeks. If Project Activities were to impact habitats that are occupied by VPFS, this would be a **significant impact**.

> **Potential Impact BIO-5:** The Proposed Project's construction activities in the Well Sites could result in take of Federal-threatened VPFS, which would be considered a significant impact.

To reduce potential impacts to VPFS to a less-than-significant level, the following measures shall be implemented:

Mitigation Measure BIO-5a: Ground disturbance activities at Well Sites 2, 24, 28, and 30 shall be conducted in the dry season (May through October) and work at other sites shall be in the dry season to

the greatest extent practical. Work within 200 feet of wetlands and ephemeral ditches will occur only in the dry season (June 1-October 31) and only in dry soils. Wetlands will be avoided by at least 100 feet and best management practices shall be implemented to prevent any potential increased erosion of sediment or turbid water from project activities into these features. If work is to be conducted from November through April, silt fencing shall be installed prior to ground disturbance around the perimeter and associated 25-foot buffer of avoided wetlands and the top of bank of drainage canals. Silt fencing adjacent to drainage canals shall be installed the greatest distance possible from the top of bank, while still maintaining prevention of runoff into the feature.

Or

Mitigation Measure BIO-5b: Prior to initial ground disturbance, protocol-level surveys for vernal pool fairy shrimp (VPFS) will be conducted at all sites where with potential to support VPFS (Well Sites 2, 24, 28, and 30). If VPFS are detected, and cannot be avoided, a permit for take coverage of the species, pursuant to the Federal Endangered Species Act will be acquired prior to commencement of Project Activities.

White-tailed Kite, Loggerhead Shrike and Common Nesting Birds

The Project may affect special-status birds including loggerhead shrike and white-tailed kite. In addition to special-status species, non-special-status native birds that are protected by the CFGC may also be impacted. Potential impacts to these species and their habitats could occur during the removal of vegetation or during ground-disturbing activities. These activities could result in the direct removal or destruction of active nests or may create audible, vibratory, and/or visual disturbances that cause birds to abandon active nests. Because nesting birds are protected by CFGC, destruction of an active nest or mortality of dependent young would be considered a **significant impact** under CEQA.

> **Potential Impact Bio-6**: The Proposed Project may directly or indirectly impact nesting birds, including special-status species.

To reduce impacts to nesting birds to less than significant level, the following measures shall be implemented:

> **Mitigation Measure Bio-6:** A survey for active bird nests at all sites shall be conducted by a qualified biologist no more than 14 days prior to the start of Project activities (vegetation removal, grading, or other initial ground-disturbing activities) if ground disturbing activities commence during the nesting season (February 1 through August 31). The survey shall be conducted in a sufficient area around the Well Site to identify the location and status of any nests that could potentially be directly or indirectly affected by vegetation removal, or grading activities. For white-tailed kite, the survey area shall extend at least 0.25 miles from the area of potential disturbance. Based on the results of the pre-construction breeding bird survey, the following measure shall apply:
>
> - If active nests of protected species are found within the Well Site, or close enough to the area to affect nesting success, a work exclusion zone shall be established around each nest. Established exclusion zones shall remain in place until all young in the nest have fledged or the nest otherwise becomes inactive (e.g. due to predation). Appropriate exclusion zone sizes shall be established by a qualified biologist. Sizes of exclusion zones vary dependent upon bird species, nest location, existing visual buffers, ambient sound levels, and other factors; an exclusion zone radius may be as small as 25 feet (for common, disturbance-adapted species) or more than 250 feet for raptors.

Listed species are typically provided more extensive exclusion zones, which may be specific to the species and/or follow CDFW guidance. Exclusion zone size may also be reduced from established levels if supported with nest monitoring by a qualified biologist indicating that work activities are not adversely impacting the nest.

7.2 Sensitive Land Cover Types

This section addresses the question:

> *b) Does the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;*

The Study Area contains two sensitive natural communities: seasonal wetlands and creeping ryegrass flat. The seasonal wetlands within the Study Area are under the jurisdiction of the RWQCB under Section 401 of the CWA and the Porter-Cologne Act. All but one feature, seasonal wetland at Well Site 2 are not under jurisdiction of the Corps under Section 404 of the CWA as they do not have direct connectivity to intermittent or perennial streams. The seasonal wetland at Well Site 2 is considered both RWQCB and Corps jurisdiction, and is thus described as a potential impact to Waters of the State and Waters of the U.S. Because seasonal wetlands are regulated by the RWQCB, impact to the community is considered a **potentially significant impact** under CEQA. Potential seasonal wetlands are present at Wells 2, 12, 13, 28, 29, 30, and 37. Project activities may directly or indirectly impact seasonal wetlands.

> **Potential Impact Bio-7**: Project activity may result in direct or indirect fill or discharge into seasonal wetlands.

To reduce potential impacts to potential seasonal wetlands to a less-than-significant level, the following measures shall be implemented:

> **Mitigation Measure Bio-7a**: A wetland delineation shall be conducted at Well Sites 2, 12, 13, 28, 29 30 and 37 to collect information on the three wetland parameters at each of the potential wetlands, according to the methods described in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* ("Corps Manual"; Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West* ("Arid West Supplement"; Corps 2008), and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008). Arid West data forms shall be filled out and a report on the results will be provided. The report will provide the information and results of the delineation. A final jurisdictional determination shall be obtained from the Corps if deemed necessary.

> **Mitigation Measure Bio-7b**: Any wetlands within the Study Area shall be avoided to the greatest extent practical. A 25-foot buffer around the perimeter of each wetland shall be included and avoided. Prior to ground disturbance, the 25-foot buffer shall be clearly flagged by a qualified biologist. If wetlands cannot be avoided, appropriate permits shall be obtained from the appropriate regulatory agencies (e.g., RWQCB and Corps). Mitigation measures outlined in the permits shall be followed; however, mitigation ratios shall be no less than 1:1 for impacted

wetland acreage, which follows the City of Sacramento General Plan ER. 2.1.6, which requires on- or off-site preservation of equal amounts impacted. If impacts to seasonal wetlands shall occur, mitigation may include, but are not limited to on-site restoration/enhancement/creation, or purchase of credits at an approved mitigation bank. **Mitigation Measure Bio-5a** as described above shall also be implemented for the protection of wetlands.

Implementation of these mitigation measures will reduce this potential impact to a level that is ***less than significant***.

Creeping ryegrass flats, which is ranked as S3 by CDFW, is only located at Well Site 28 within the proposed activity area and associated 100-foot buffer. The S3 ranking by CDFW indicates this natural community is at a moderate risk of extirpation due to limited range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors (NatureServe 2020). Because this natural community is considered sensitive by CDFW due to reasons listed above, impact to the community is considered a **potentially significant impact** under CEQA.

Potential Impact Bio-8: The Proposed Project may directly or indirectly impact creeping ryegrass flats. This natural community is also a potential wetland as creeping ryegrass is a wetland indicator species. If a wetland delineation determines this area to be a wetland, Mitigation Measures Bio-7 above, shall be implemented.

If a wetland delineation determines this area to not be a wetland, to reduce potential impacts to creeping ryegrass flats to a less-than-significant level, the following measures shall be implemented:

Mitigation Measure Bio-8: Prior to ground disturbance or staging of materials at Well 28, the edge of the creeping ryegrass flats and associated 10-foot buffer shall be flagged by a qualified biologist and shall be avoided. If Project activities cannot avoid the buffered area, then a Habitat Mitigation and Monitoring Plan (HMMP) shall be drafted. The HMMP shall provide guidance for restoring, enhancing, and/or creating suitable habitat for the creeping ryegrass flat, and shall also provide success criteria which will ensure success of mitigation efforts. Mitigation ratios shall be a minimum of 2:1 for percent cover.
The HMMP shall be final upon approval by the City of Sacramento and interested regulatory agencies.

Implementation of this mitigation measure will reduce this potential impact to a level that is ***less than significant***.

7.3 Aquatic Resources

This section analyzes the Project's potential impacts and mitigation for wetlands and other areas presumed or determined to be within the jurisdiction of the Corps or Regional Water Quality Control Board in reference to the significance threshold outlined in CEQA Appendix G, Part IV (c):

c) Does the Project have the potential to have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

Direct impacts to potential Section 404 wetlands located within the Study Area are avoided due to the preferential siting of project activities in areas that do not contain these features. Potential for indirect impacts exist at Wells 2, 24, 28, and 30, as areas of proposed activities and staging are located within 100-feet of a drainage canal or ditch and no levee is present between the feature and the activity areas. Furthermore, one seasonal wetland located at Well Site 2 is potentially impacted by well site activities, and due to its location adjacent to, and directly connected to a potential jurisdictional drainage canal this feature would be a jurisdictional Waters of the U.S. regulated by the Corps. Potential direct and indirect impacts to jurisdictional wetlands and non-wetland Waters of the U.S. are considered a **potentially significant impact** under CEQA.

> **Potential Impact Bio-9**: Project activity may result in unintentional fill or discharge into seasonal wetland, drainage canals or ditch.

To reduce potential impacts to streams to a less-than-significant level, the following measures shall be implemented:

> **Mitigation Measures Bio-5a, 7a-b**, as described above.

Implementation of these mitigation measure will reduce this potential impact to a level that is ***less than significant***.

7.4 Wildlife Corridors and Native Wildlife Nursery Sites

This section analyzes the Project's potential impacts and mitigation for habitat corridors and linkages in reference to the significance threshold outlined in CEQA Appendix G, Part IV (d):

> *d) Does the Project have the potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;*

No portions of the Study Area provide connectivity between areas of suitable habitat. For terrestrial species, all portions of the Study Area are within a greater context of urban development, and for aquatic species, there is no connectivity between the Study Area and upstream freshwater habitats. No impact will occur to migratory corridors for terrestrial and aquatic species.

Migratory birds may use portions of the Study Area opportunistically, however, the overwhelming majority of higher quality habitat along the Pacific Flyway exists outside the Study Area. Most of the Study Area is developed or supports disturbed habitats embedded in a highly urbanized setting. Based on these factors, proposed project will result in a **less than significant impact** to migratory corridors and habitat linkages.

7.5 Local Policies and Ordinances

This section analyzes the Project's potential impacts and mitigation based on conflicts with local policies and ordinances in reference to the significance threshold outlined in CEQA Appendix G, Part IV (e):

> *e) Does the Project have the potential to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;*

Local plans and policies related to biological resources examined in this analysis are:

- City of Sacramento Tree Ordinance
- City of Sacramento General Plan Wetland Protection

Potential Impact Bio-10a: Several potential wetlands are present within the Study Area and potential direct and indirect impacts may occur and are subject to the City of Sacramento General Plan ER. 2.1.6, which requires on- or off-site preservation of equal amounts of wetlands impacted.

To reduce potential impacts to wetlands to a less-than-significant level, the following measures shall be implemented: **Mitigation Measures Bio-5a, 7a-b**, as described above.

Implementation of these mitigation measures will reduce this potential impact to a level that is ***less than significant***.

The Project may require removal of trees covered by City of Sacramento Tree Ordinance for construction and/or access. All trees on City property qualify as City Trees, as described in Section 12.56.20. Removal of City Trees for public projects requires approval by the director, as outlined in Section 12.56.40. Based on site assessments, 16 of the sites (2, 3, 4, 5, 7, 8, 9, 16, 21, 23, 26, 27, 30, 32, 35, and 36) contain trees within the well activity area. Some or all of these tree may have regulated work conducted, as described in Section 12.56.20, as part of this public project. As City Trees are defined by a local ordinance, potential direct and indirect impacts are considered a **potentially significant impact** under CEQA.

> **Potential Impact Bio-10b**: Project activities may directly or indirectly impact City Trees as defined in the City Tree Ordinance.

To reduce potential impacts to City Trees to a less-than-significant level, the following measures shall be implemented:

> **Mitigation Measure Bio-9:** For trees that cannot be avoided, any removal of City Trees shall follow the guidelines outlined in the Ordinance Section 12.56.40 and permits shall be acquired as outlined in Section 12.56.050.

Implementation of these mitigation measures will reduce this potential impact to a level that is ***less than significant***.

7.6 Habitat Conservation Plans

This section analyzes the Project's potential impacts and mitigation based on conflicts with any adopted local, regional, and state habitat conservation plans in reference to the significance threshold outlined in CEQA Appendix G, Part IV (f):

> *f) Does the Project have the potential to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

Projects located within the NBHCP Area may obtain permits and mitigation coverage through payment of in-lieu fees to the NBHCP and the City of Sacramento is a participant in the HCP. Projects receiving permits through the NBHCP must also implement avoidance and minimization measures included in the NBHCP to reduce the potential for take of covered species. These measures are outlined in Chapter 5 of the NBHCP. The NBHCP requires that the area surrounding the Study Area be assessed to determine whether certain species and/or habitats that could potentially support special-status species are present. The area to be assessed ranges from a 200-foot radius surrounding the Study Area (for giant garter snake [*Thamnophis gigas*]) to a 0.5-mile radius surrounding the Study Area (for Swainson's hawk [*Buteo swainsoni*]).

The Study Area includes five Well Sites (15, 19, 20, 23, and 39) which are located within the NBHCP area. While the City may decide to implement provisions of the NBHCP for impacts that may occur to covered biological resources, no conflict with the NBHCP could be identified. Therefore, the Project would result in **no significant impact**.

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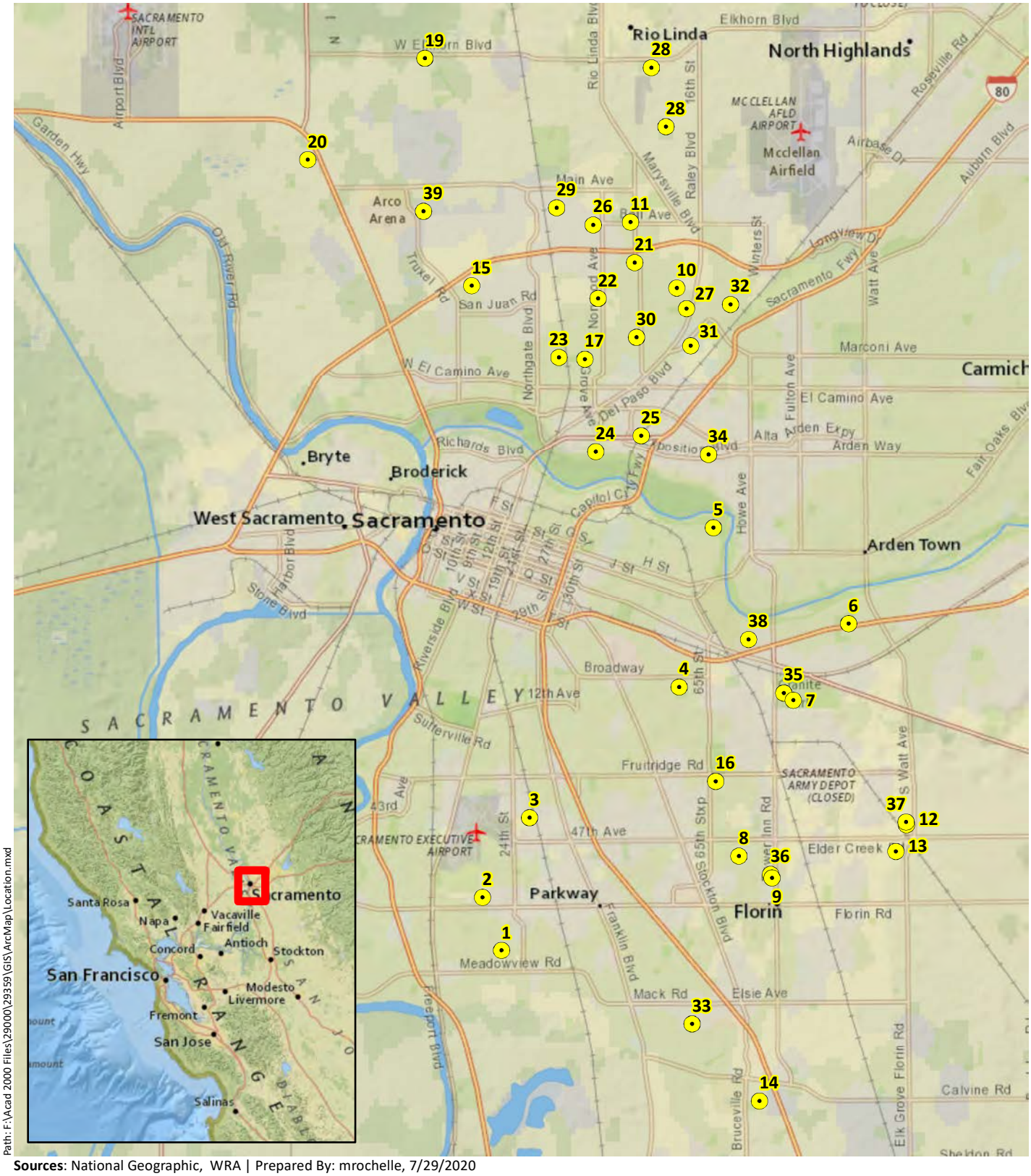
Appendix A -- Figures

Appendix A Figure 1 -- Location



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Sources: National Geographic, WRA | Prepared By: mrochelle, 7/29/2020

Figure 1. Regional Location Map

City of Sacramento Groundwater Master Plan
Sacramento County, California

0 1 2 Miles

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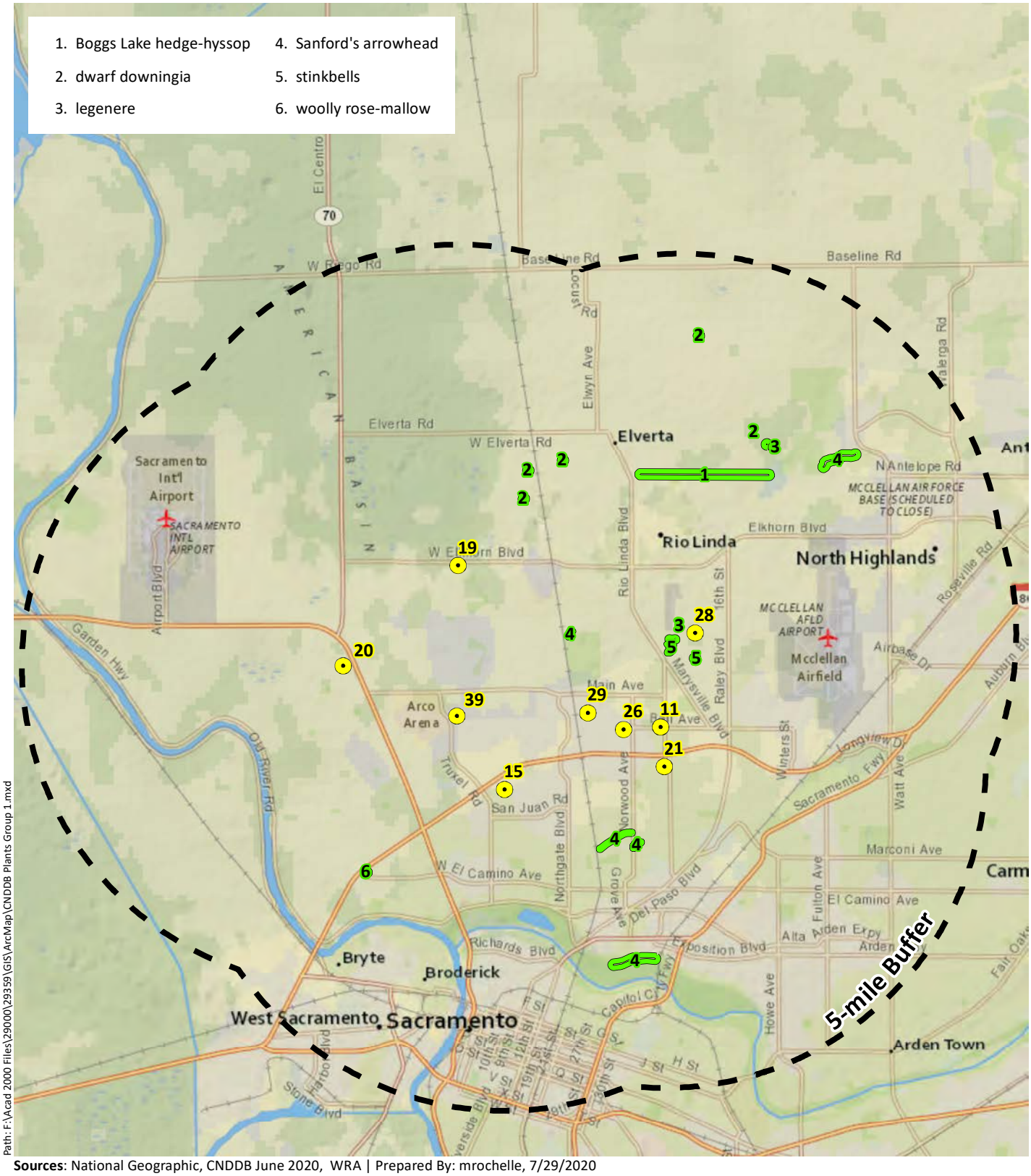
Appendix A -- Figure 2 Special-status Plants



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Sources: National Geographic, CNDDB June 2020, WRA | Prepared By: mrochelle, 7/29/2020

Figure 2a. Special-Status Plant Species Documented within 5-miles (Well Sites 11,15,19,20,21,26,28,29,39)

City of Sacramento Groundwater Master Plan
Sacramento County, California

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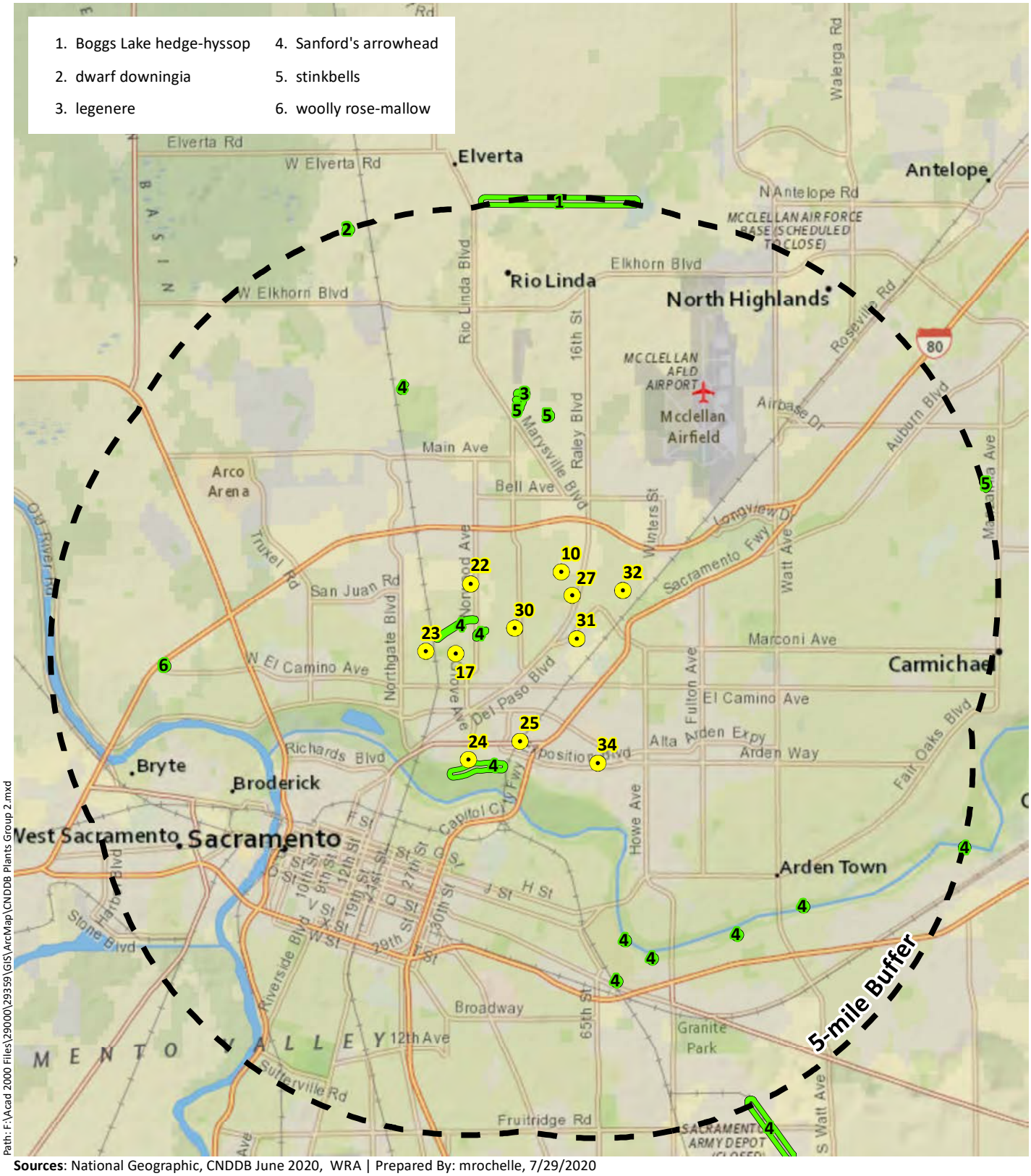

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Sources: National Geographic, CNDDB June 2020, WRA | Prepared By: mrochelle, 7/29/2020

Figure 2b. Special-Status Plant Species Documented within 5-miles (Well Sites 10,17,22,23,24,25,27,30,31,32,34)

City of Sacramento Groundwater Master Plan
Sacramento County, California

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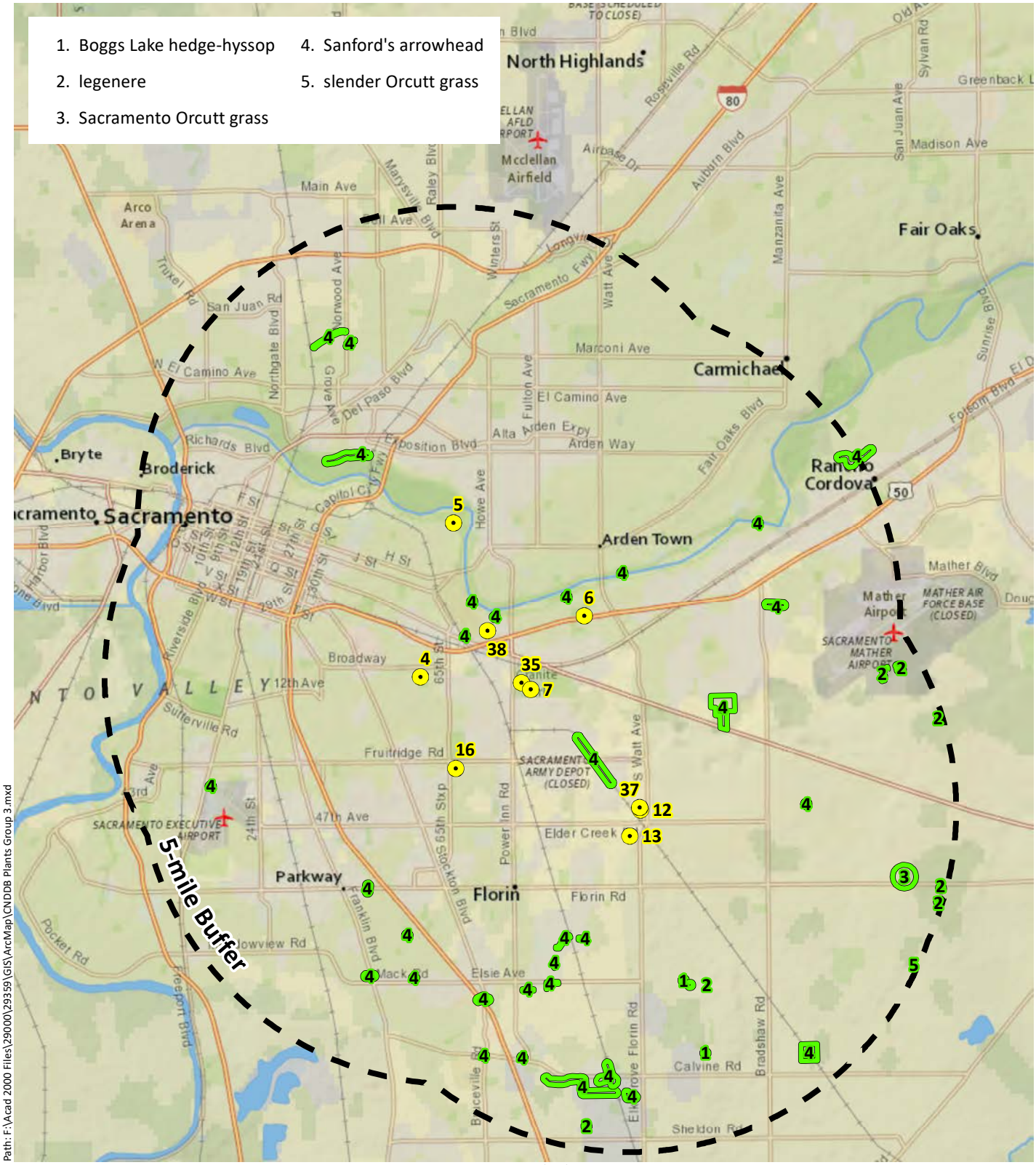

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Sources: National Geographic, CNDDB June 2020, WRA | Prepared By: mrochelle, 7/29/2020

Figure 2c. Special-Status Plant Species Documented within 5-miles (Well Sites 4,5,6,7,12,13,16,35,37,38)

City of Sacramento Groundwater Master Plan
Sacramento County, California

0 1 2 Miles

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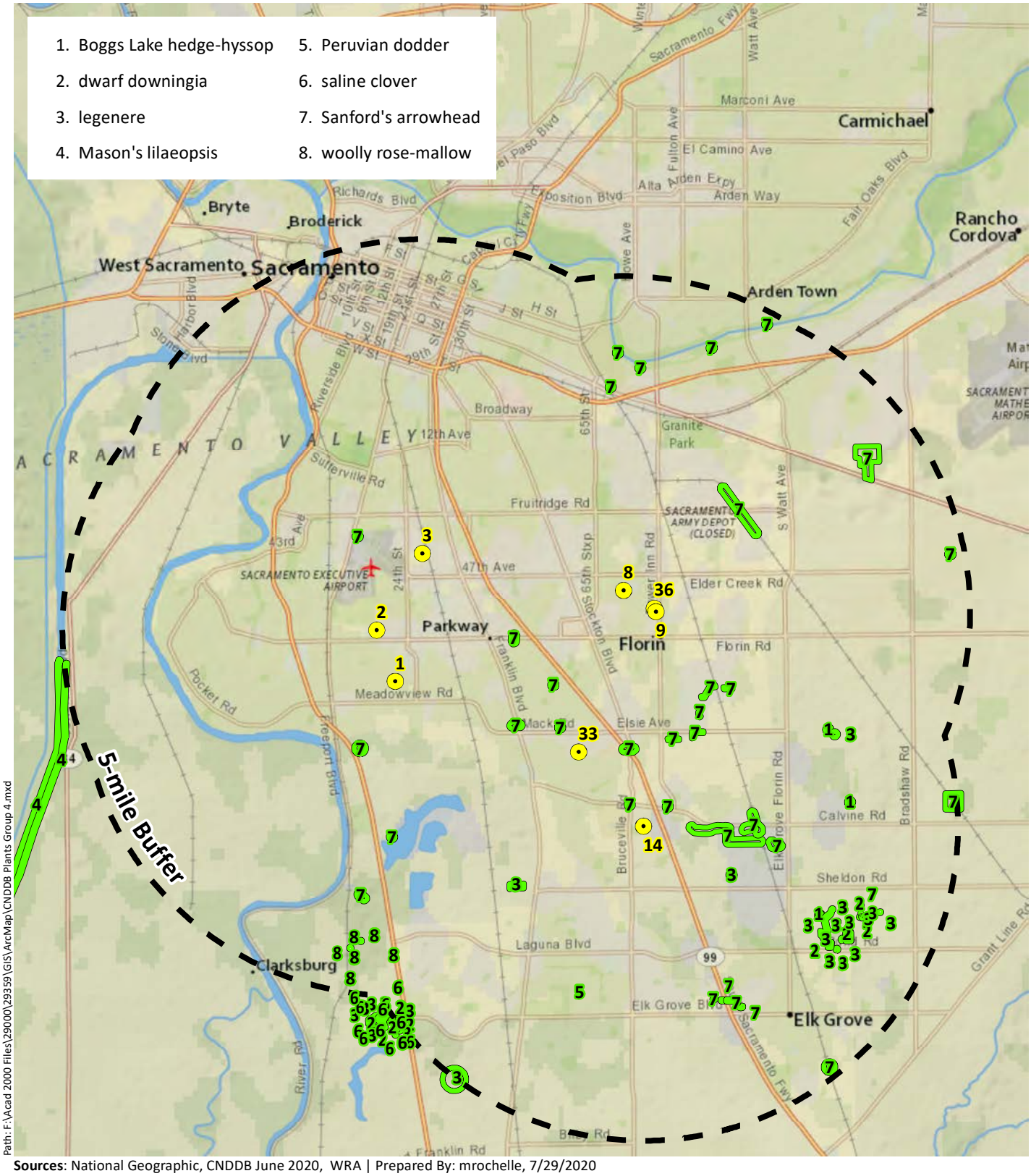

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Sources: National Geographic, CNDDB June 2020, WRA | Prepared By: mrochelle, 7/29/2020

Figure 2d. Special-Status Plant Species Documented within 5-miles (Well Sites 1,2,3,8,9,14,33,36)

City of Sacramento Groundwater Master Plan
Sacramento County, California

0 1 2 Miles

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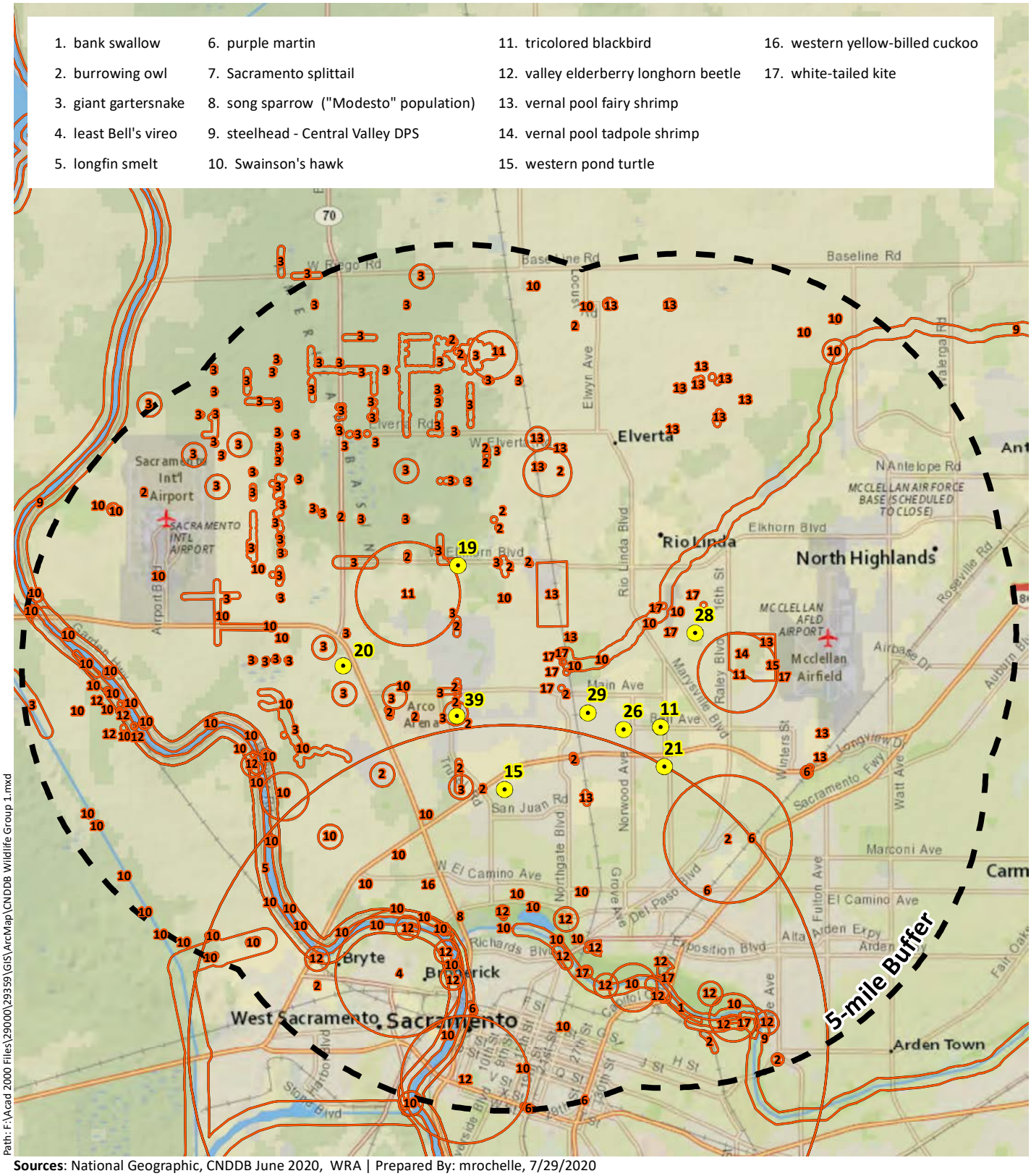
Appendix A -- Figure 3 Special -status Wildlife



Sources: National Geographic, CNDDB June 2020, WRA | Prepared By: mrochelle, 7/29/2020

Figure 3a. Special-Status Wildlife Species Documented within 5-miles (Well Sites 11,15,19,20,21,26,28,29,39)

City of Sacramento Groundwater Master Plan
Sacramento County, California

0 1 2 Miles

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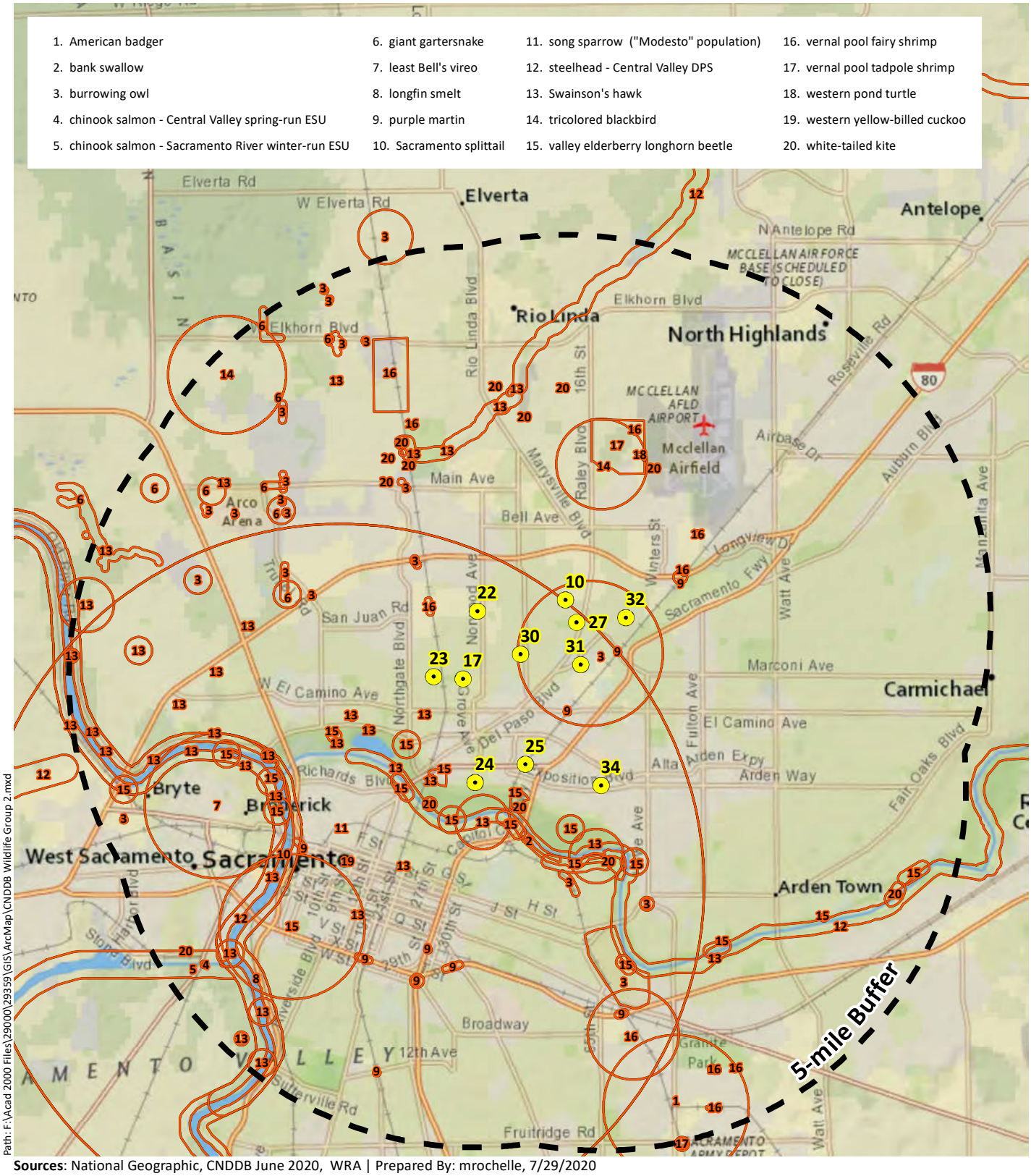

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Sources: National Geographic, CNDDB June 2020, WRA | Prepared By: mrochelle, 7/29/2020

Figure 3b. Special-Status Wildlife Species Documented within 5-miles (Well Sites 10,17,22,23,24,25,27,30,31,32,34)

City of Sacramento Groundwater Master Plan
Sacramento County, California

0 1 2 Miles

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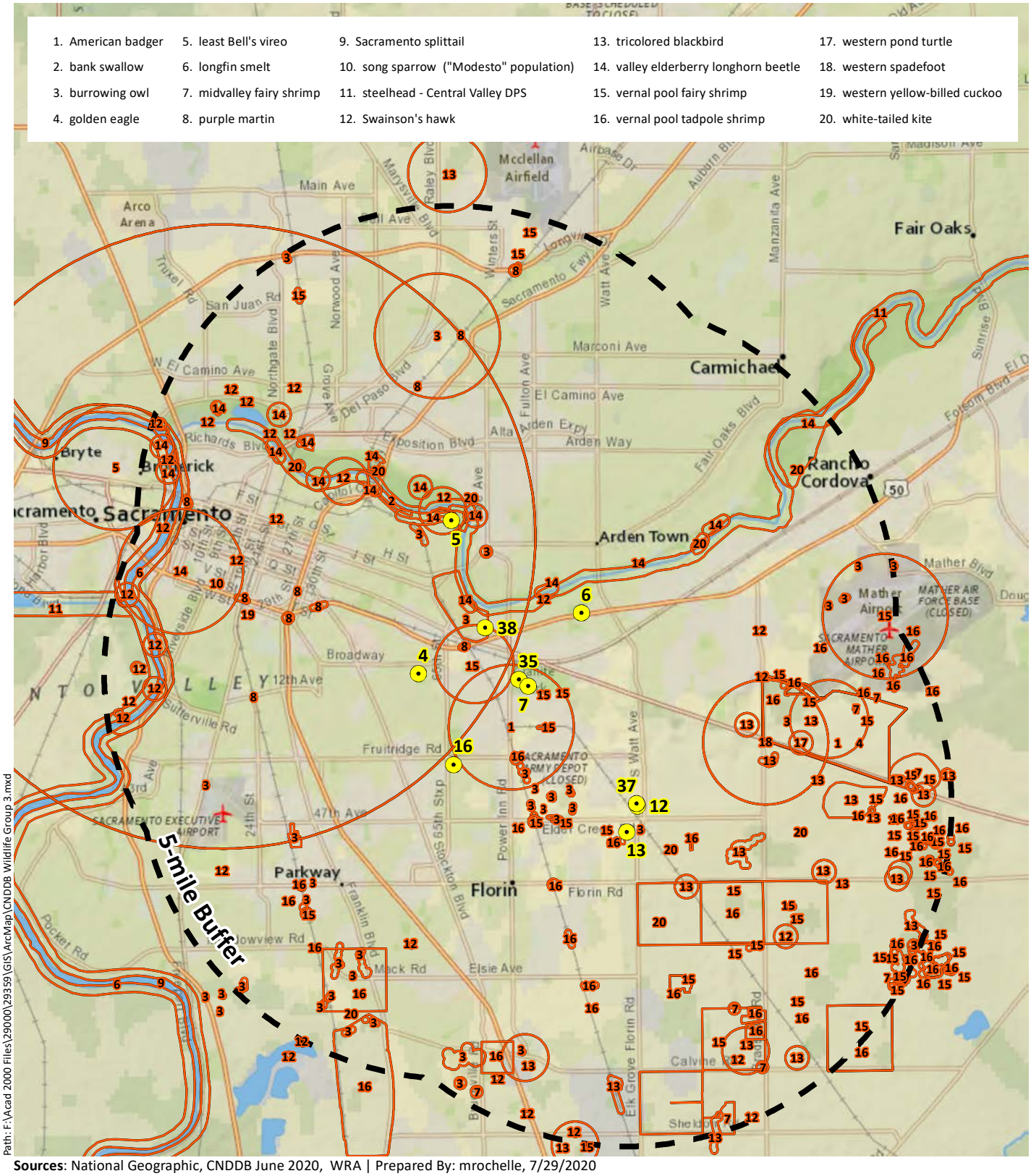

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Sources: National Geographic, CNDDB June 2020, WRA | Prepared By: mrochelle, 7/29/2020

Figure 3c. Special-Status Wildlife Species Documented within 5-miles (Well Sites 4,5,6,7,12,13,16,35,37,38)

City of Sacramento Groundwater Master Plan
Sacramento County, California

0 1 2 Miles

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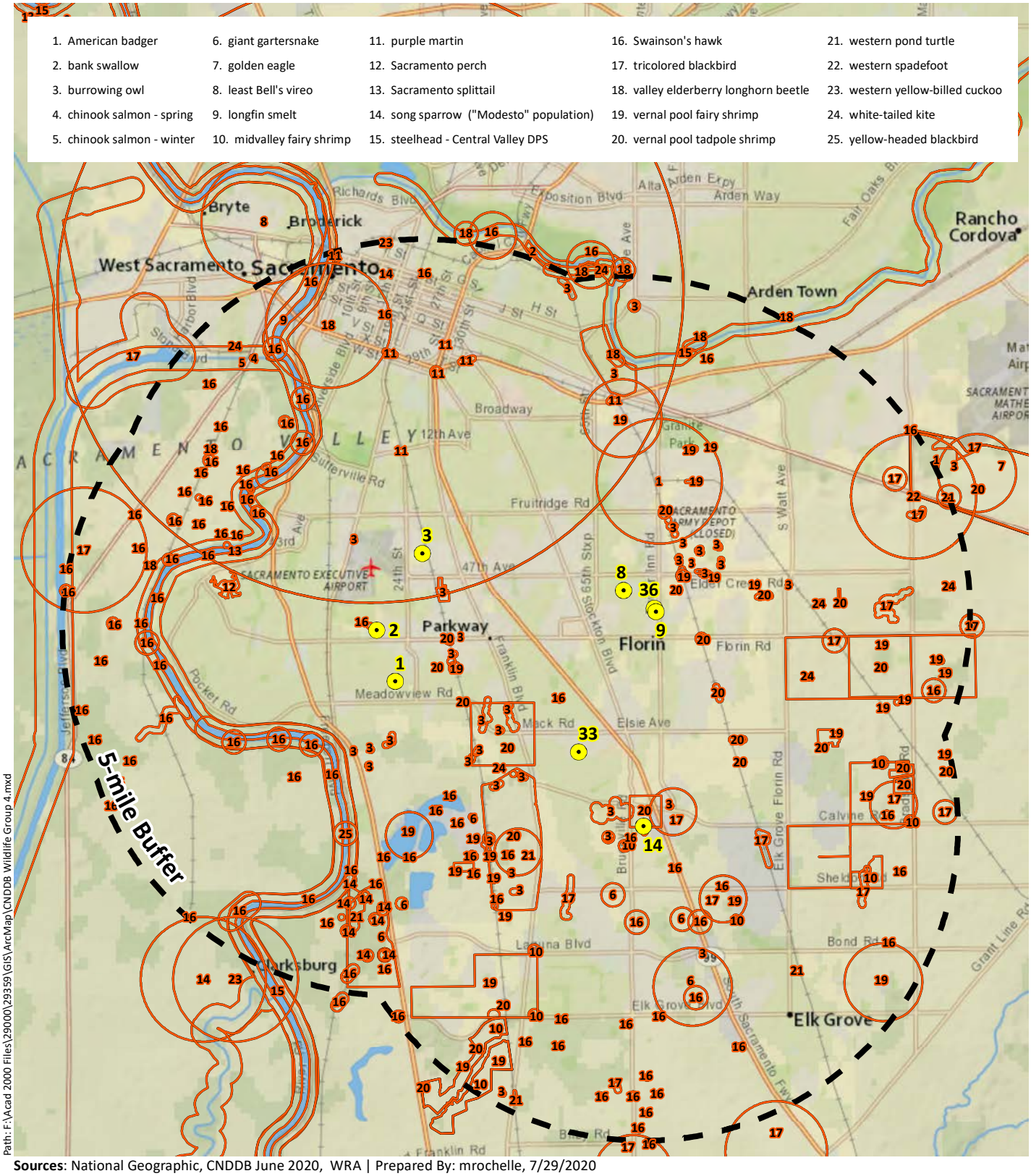

Sources: National Geographic, CNDDB June 2020, WRA | Prepared By: mrochelle, 7/29/2020

Figure 3d. Special-Status Wildlife Species Documented within 5-miles (Well Sites 1,2,3,8,9,14,33,36)

City of Sacramento Groundwater Master Plan
Sacramento County, California

0 1 2 Miles

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Appendix A -- Figure 4 Sensitive Land Cover

Figure 4a. Sensitive Land Cover Types in the Study Area (Well Site 2)

City of Sacramento
Groundwater Master Plan
Sacramento County, California

Study Area
Control Building
Potential Construction Staging Area
Well Site Activity Area

Sensitive Land Cover Type

Ditch
Seasonal Wetland

N

0 50 100
Feet

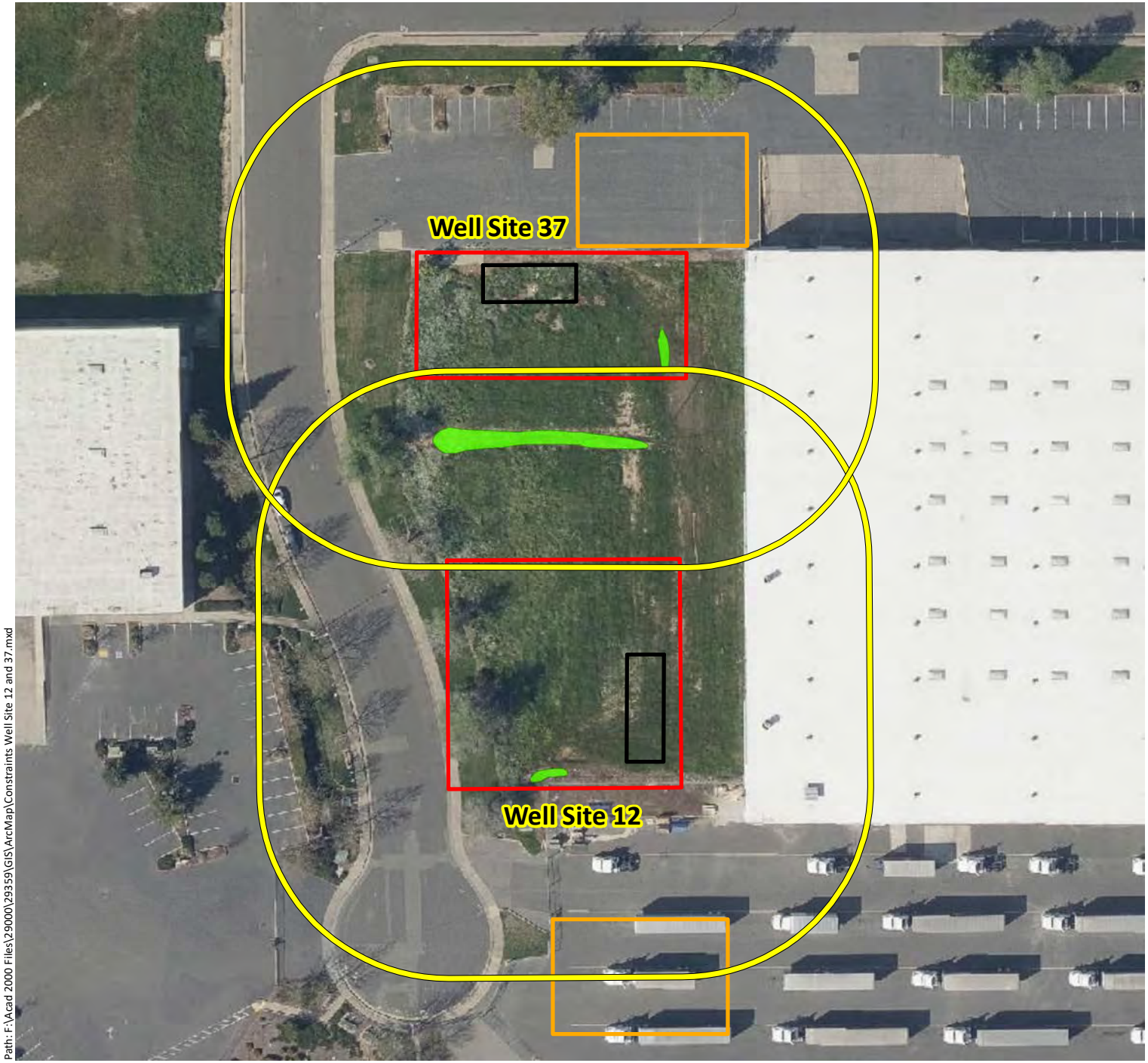
wra
ENVIRONMENTAL CONSULTANTS

Path: F:\Acad 2000 Files\29000\29359\GIS\ArcMap\Constraints Well Site 2.mxd

Sources: 2019 Vivid Aerial, WRA, Woodard & Curran, 2018-19 USGS LiDAR | Prepared By: mrochelle, 7/29/2020

Figure 4b. Sensitive Land Cover Types in the Study Area (Well Site 12 & 37)

City of Sacramento
Groundwater Master Plan
Sacramento County, California



Study Area
Control Building
Potential Construction Staging Area
Well Site Activity Area

Sesnsitive Land Cover Type

Seasonal Wetland

N

0 50 100

Feet

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ENVIRONMENTAL CONSULTANTS

Path: F:\Acad 2000 Files\29000\29359\GIS\ArcMap\Constraints Well Site 12 and 37.mxd

Sources: 2019 Vivid Aerial, WRA, Woodard & Curran, 2018-19 USGS LiDAR | Prepared By: mrochelle, 7/29/2020

Figure 4c. Sensitive Land Cover Types in the Study Area (Well Site 13)

City of Sacramento
Groundwater Master Plan
Sacramento County, California

Study Area
Control Building
Potential Construction Staging Area
Well Site Activity Area

Sensitive Land Cover Type

Seasonal Wetland

N

0 50 100

Feet

ENVIRONMENTAL CONSULTANTS

Path: F:\Acad 2000 Files\29000\29359\GIS\ArcMap\Constraints Well Site 13.mxd

Sources: 2019 Vivid Aerial, WRA, Woodard & Curran, 2018-19 USGS LiDAR | Prepared By: mrochelle, 7/29/2020

Figure 4d. Sensitive Land Cover Types in the Study Area (Well Site 24)

City of Sacramento
Groundwater Master Plan
Sacramento County, California

Study Area
Control Building
Potential Construction Staging Area
Well Site Activity Area

Sensitive Land Cover Type

Drainage Canal

N

0 50 100

Feet

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ENVIRONMENTAL CONSULTANTS

Path: F:\Acad 2000 Files\29000\29359\GIS\ArcMap\Constraints Well Site 24.mxd

Sources: 2019 Vivid Aerial, WRA, Woodard & Curran, 2018-19 USGS LiDAR | Prepared By: mrochelle, 7/29/2020

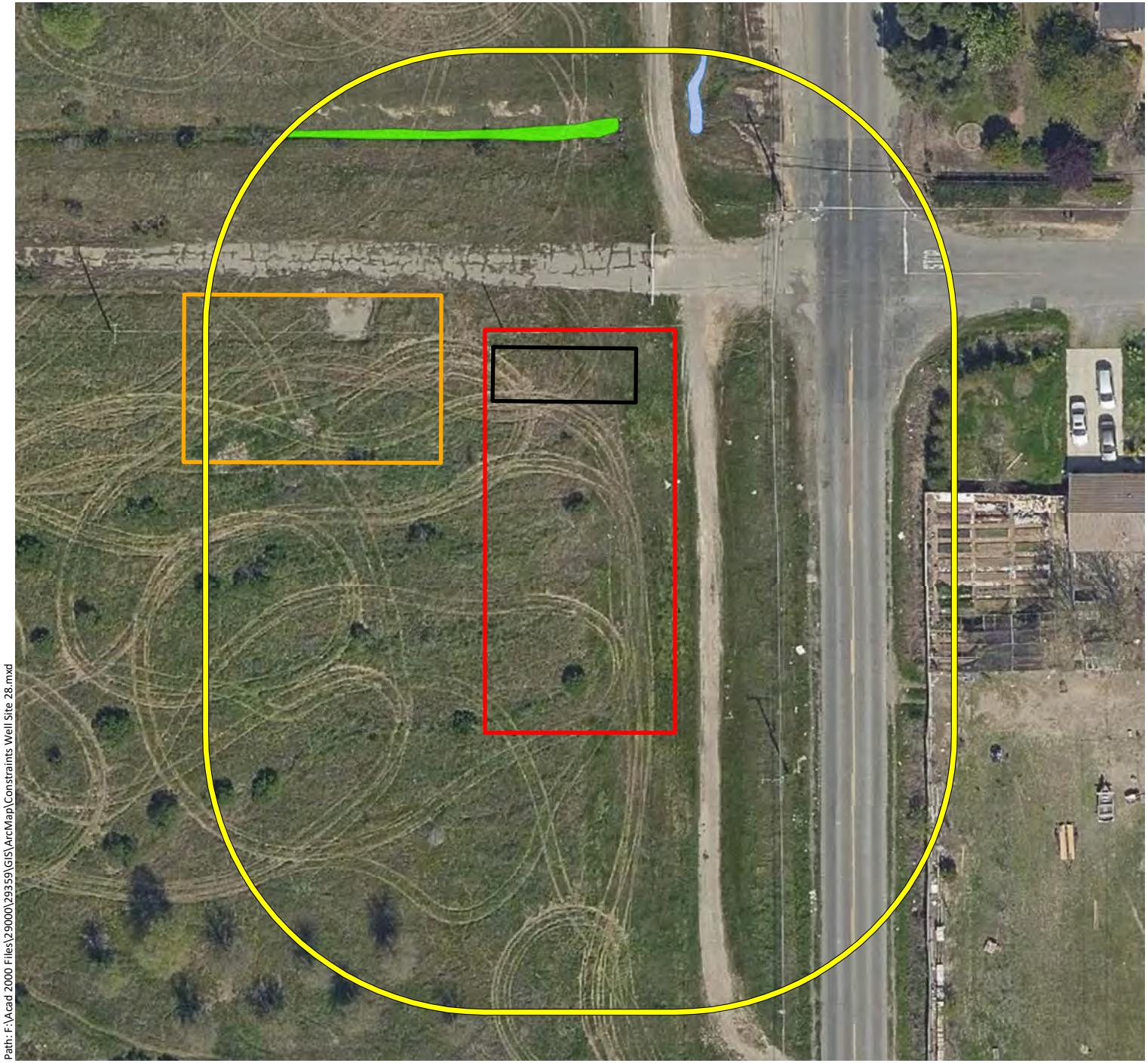

Figure 4e. Sensitive Land Cover Types in the Study Area (Well Site 28)

City of Sacramento
Groundwater Master Plan
Sacramento County, California

Study Area
Control Building
Potential Construction Staging Area
Well Site Activity Area

Sensitive Land Cover Type

Ditch
Seasonal Wetland

N

0 50 100
Feet

ENVIRONMENTAL CONSULTANTS

Path: F:\Acad 2000 Files\29000\29359\GIS\ArcMap\Constraints Well Site 28.mxd

Sources: 2019 Vivid Aerial, WRA, Woodard & Curran, 2018-19 USGS LiDAR | Prepared By: mrochelle, 7/29/2020

Figure 4f.
Sensitive Land Cover Types in the Study Area (Well Site 29)

City of Sacramento
Groundwater Master Plan
Sacramento County, California

Study Area
Control Building
Potential Construction Staging Area
Well Site Activity Area

Sensitive Land Cover Type

Seasonal Wetland

N

0 50 100

Feet

wra
ENVIRONMENTAL CONSULTANTS

Path: F:\Acad 2000 Files\29000\29359\GIS\ArcMap\Constraints Well Site 29.mxd

Sources: 2019 Vivid Aerial, WRA, Woodard & Curran, 2018-19 USGS LiDAR | Prepared By: mrochelle, 7/29/2020

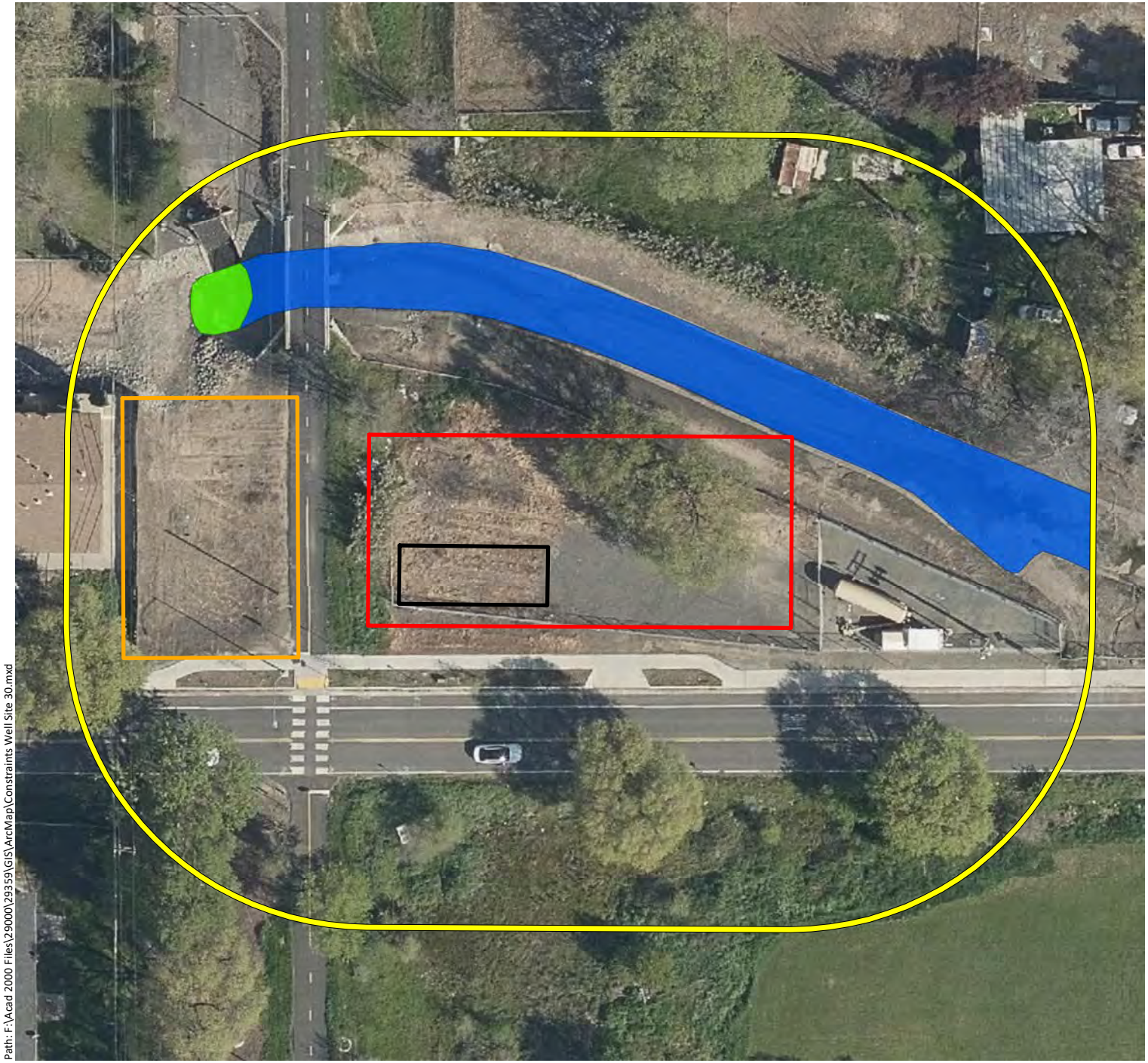

Figure 4g. Sensitive Land Cover Types in the Study Area (Well Site 30)

City of Sacramento
Groundwater Master Plan
Sacramento County, California

Study Area
Control Building
Potential Construction Staging Area
Well Site Activity Area

Sensitive Land Cover

Seasonal Wetland
Drainage Canal

N

0 50 100
Feet

ENVIRONMENTAL CONSULTANTS

Path: F:\Acad 2000 Files\29000\29359\GIS\ArcMap\Constraints Well Site 30.mxd

Sources: 2019 Vivid Aerial, WRA, Woodard & Curran, 2018-19 USGS LiDAR | Prepared By: mrochelle, 7/29/2020

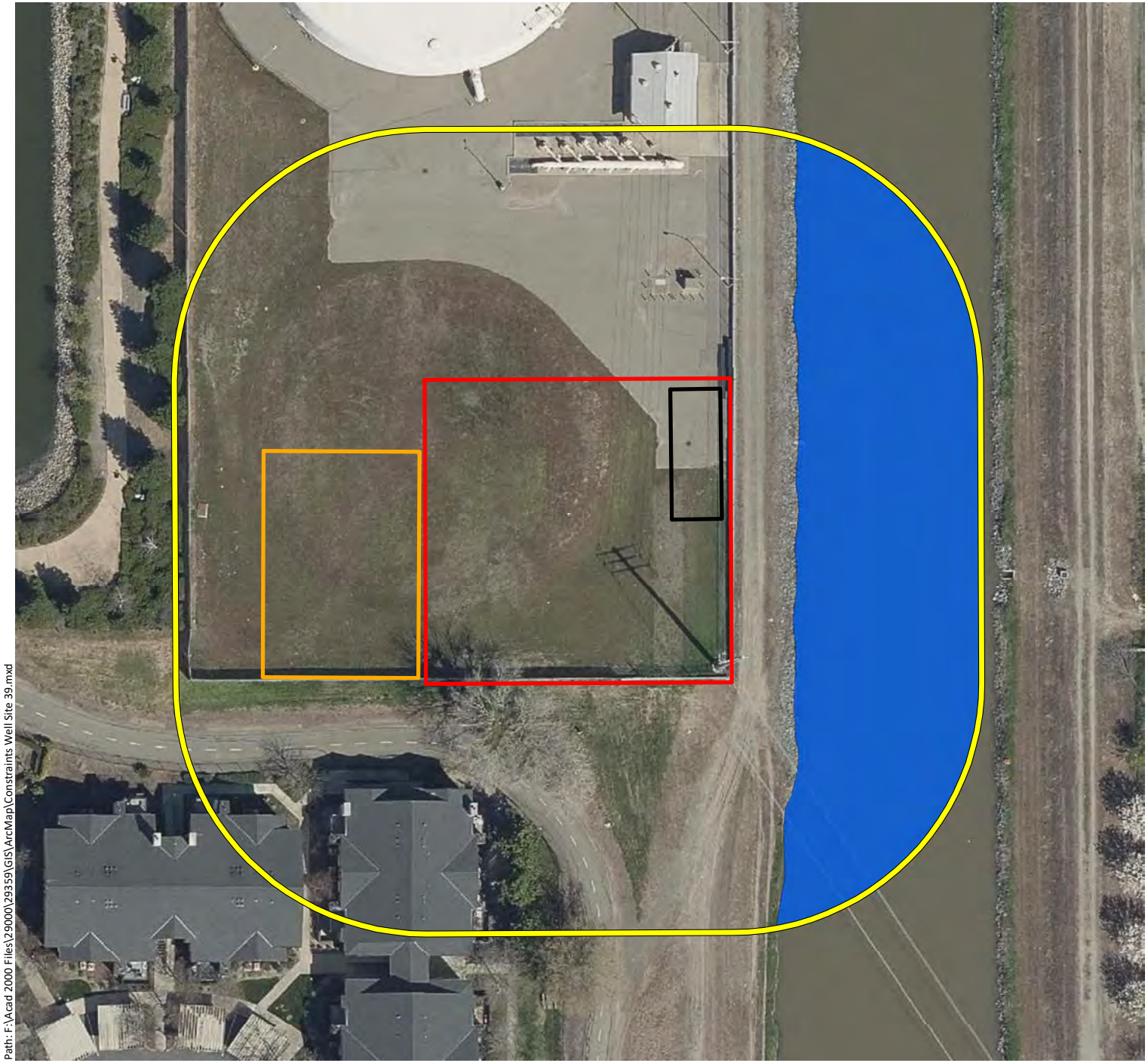

Figure 4h. Sensitive Land Cover Types in the Study Area (Well Site 39)

City of Sacramento
Groundwater Master Plan
Sacramento County, California

Study Area
Control Building
Potential Construction Staging Area
Well Site Activity Area

Sensitive Land Cover

Drainage Canal

N

0 50 100

Feet

wra
ENVIRONMENTAL CONSULTANTS

Path: F:\Acad 2000 Files\29000\29359\GIS\ArcMap\Constraints Well Site 39.mxd

Sources: 2019 Vivid Aerial, WRA, Woodard & Curran, 2018-19 USGS LiDAR | Prepared By: mrochelle, 7/29/2020

Appendix B -- Observed Species

Appendix B. Plant species observed in the Study Area

Scientific Name	Common Name	Origin	Form	Rarity Status	CAL-IPC Status	Wetland Status (AW 2016)
Acmispon americanus var. *americanus*	Spanish lotus	native	annual herb	-	-	UPL
Avena barbata	Slim oat	non-native (invasive)	annual, perennial grass	-	Moderate	-
Azolla sp.	-	-	-	-	-	-
Baccharis pilularis	Coyote brush	native	shrub	-	-	-
Bromus catharticus	Rescue grass	non-native	annual, perennial grass	-	-	-
Bromus diandrus	Ripgut brome	non-native (invasive)	annual grass	-	Moderate	-
Bromus tectorum	Cheat grass	non-native (invasive)	annual grass	-	High	-
Centaurea solstitialis	Yellow starthistle	non-native (invasive)	annual herb	-	High	-
Centromadia fitchii	Spikeweed	native	annual herb	-	-	FACU
Cerastium glomeratum	Large mouse ears	non-native	annual herb	-	-	UPL
Chenopodium sp.	-	-	-	-	-	-
Cichorium intybus	Chicory	non-native	perennial herb	-	-	FACU
Croton setiger	Turkey-mullein	native	perennial herb	-	-	-
Cynodon dactylon	Bermuda grass	non-native (invasive)	perennial grass	-	Moderate	FACU
Cyperus eragrostis	Tall cyperus	native	perennial grasslike herb	-	-	FACW
Deschampsia danthonioides	Annual hairgrass	native	annual grass	-	-	FACW
Digitaria sp.	-	-	-	-	-	-
Dittrichia graveolens	Stinkwort	non-native (invasive)	annual herb	-	Moderate	-
Echinochloa crus-galli	Barnyard grass	non-native	annual grass	-	-	FACW
Epilobium brachycarpum	Willow herb	native	annual herb	-	-	-
Erigeron bonariensis	Flax-leaved horseweed	non-native	annual herb	-	-	FACU
Erodium botrys	Big heron bill	non-native	annual herb	-	-	FACU

Scientific Name	Common Name	Origin	Form	Rarity Status	CAL-IPC Status	Wetland Status (AW 2016)
Erodium brachycarpum	White stemmed filaree	non-native	annual herb	-	-	-
Eschscholzia californica	California poppy	native	annual, perennial herb	-	-	-
Euphorbia maculata	Spotted spurge	non-native	annual herb	-	-	UPL
Euthamia occidentalis	Western goldenrod	native	perennial herb	-	-	FACW
Festuca bromoides	Brome fescue	non-native	annual grass	-	-	FACU
Festuca perennis	Italian rye grass	non-native (invasive)	annual, perennial grass	-	Moderate	FAC
Hedera helix	English ivy	non-native (invasive)	vine, shrub	-	High	FACU
Helminthotheca echioides	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	-	Limited	FAC
Hirschfeldia incana	Short-podded mustard	non-native (invasive)	perennial herb	-	Moderate	-
Holocarpha virgata	Narrow tarplant	native	annual herb	-	-	-
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	non-native (invasive)	annual grass	-	Moderate	FAC
Hypochaeris radicata	Hairy cats ear	non-native (invasive)	perennial herb	-	Moderate	FACU
Juncus bufonius	Common toad rush	native	annual grasslike herb	-	-	FACW
Juncus mexicanus	Mexican rush	native	perennial grasslike herb	-	-	FACW
Kickxia elatine	Sharp point fluellin	non-native	perennial herb	-	-	UPL
Lactuca saligna	Willow lettuce	non-native	annual herb	-	-	UPL
Lactuca serriola	Prickly lettuce	non-native	annual herb	-	-	FACU
Lagerstroemia indica	crepe myrtle	non-native	tree	-	-	-
Leptochloa fusca	Sprangletop	native	annual grass	-	-	FACW
Lonicera japonica	Japanese honeysuckle	non-native	vine, shrub	-	-	FACU
Lotus corniculatus	Bird's foot trefoil	non-native	perennial herb	-	-	FAC
Ludwigia peploides	Marsh purslane	non-native (invasive)	perennial herb	-	High	OBL

Scientific Name	Common Name	Origin	Form	Rarity Status	CAL-IPC Status	Wetland Status (AW 2016)
Ludwigia sp.	-	-	-	-	-	-
Lythrum hyssopifolia	Hyssop loosestrife	non-native (invasive)	annual, perennial herb	-	Limited	OBL
Malva parviflora	Cheeseweed	non-native	annual herb	-	-	-
Malva sp.	-	-	-	-	-	-
Malvella leprosa	Alkali mallow	native	perennial herb	-	-	FACU
Oxalis corniculata	Creeping wood sorrel	non-native	perennial herb	-	-	FACU
Paspalum dilatatum	Dallis grass	non-native	perennial grass	-	-	FAC
Persicaria sp.	-	-	-	-	-	-
Phalaris paradoxa	Hood canarygrass	non-native	annual grass	-	-	FAC
Phyla nodiflora	Common lippia	native	perennial herb	-	-	FACW
Pinus ponderosa	Ponderosa pine	native	tree	-	-	FACU
Pistacia chinensis	Chinese pistache	non-native	tree	-	-	-
Plantago lanceolata	Ribwort	non-native (invasive)	perennial herb	-	Limited	FAC
Plantago major	Common plantain	non-native	perennial herb	-	-	FAC
Platanus racemosa	California sycamore	native	tree	-	-	FAC
Platanus x *racemosa*	London plane	non-native	tree	-	-	-
Poa annua	Annual blue grass	non-native	annual grass	-	-	FAC
Polygonum aviculare	Prostrate knotweed	non-native	annual, perennial herb	-	-	FAC
Populus fremontii ssp. *fremontii*	Cottonwood	native	tree	-	-	FAC
Portulaca oleracea	Common purslane	non-native	annual herb	-	-	FAC
Prunella vulgaris	Self heal	native	perennial herb	-	-	FACU
Pyracantha sp.	-	-	-	-	-	-
Quercus douglasii	Blue oak	native	tree	-	-	-
Quercus lobata	Valley oak	native	tree	-	-	FACU
Quercus suber	Cork oak	non-native	tree	-	-	-
Raphanus sativus	Wild radish	non-native (invasive)	annual, biennial herb	-	Limited	-

Scientific Name	Common Name	Origin	Form	Rarity Status	CAL-IPC Status	Wetland Status (AW 2016)
Robinia pseudoacacia	Black locust	non-native (invasive)	tree	-	Limited	FACU
Rubus armeniacus	Himalayan blackberry	non-native (invasive)	shrub	-	High	FAC
Rumex crispus	Curly dock	non-native (invasive)	perennial herb	-	Limited	FAC
Salsola tragus	Russian thistle	non-native (invasive)	annual herb	-	Limited	FACU
Sambucus nigra ssp. *caerulea*	Blue elderberry	native	shrub	-	-	FAC
Scleranthus annuus ssp. *annuus*	German knotgrass	non-native	annual herb	-	-	FACU
Sequoia sempervirens	Coast redwood	native	tree	-	-	-
Silybum marianum	Milk thistle	non-native (invasive)	annual, perennial herb	-	Limited	-
Sorghum halepense	Johnsongrass	non-native	perennial grass	-	-	FACU
Spergularia rubra	Purple sand spurry	non-native	annual, perennial herb	-	-	FAC
Taraxacum officinale	Red seeded dandelion	non-native	perennial herb	-	-	FACU
Tribulus terrestris	Puncture vine	non-native (invasive)	annual herb	-	Limited	-
Trifolium dubium	Shamrock	non-native	annual herb	-	-	UPL
Trifolium fragiferum	Strawberry clover	non-native	perennial herb	-	-	FAC
Trifolium repens	White clover	non-native	perennial herb	-	-	FACU
Triticum aestivum	Common wheat	non-native	annual grass	-	-	-
Veronica peregrina ssp. *xalapensis*	Speedwell	native	annual herb	-	-	FAC
Vicia sativa	Spring vetch	non-native	annual herb, vine	-	-	FACU
Vicia villosa	Hairy vetch	non-native	annual herb, vine	-	-	-

All species identified using the *Jepson Manual, 2nd Edition* (Baldwin et al. 2012) and *A Flora of Sonoma County* (Best et al. 1996); nomenclature follows *The Jepson Flora Project* (eFlora 2018) unless otherwise noted

Sp.: “species”, intended to indicate that the observer was confident in the identity of the genus but uncertain which species
Cf.: intended to indicate a species appeared to the observer to be specific, but was not identified based on diagnostic characters

[1]Rare Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2018)

FE:	Federal Endangered
FT:	Federal Threatened
SE:	State Endangered
ST:	State Threatened
SR:	State Rare
Rank 1A:	Plants presumed extirpated in California and either rare or extinct elsewhere
Rank 1B:	Plants rare, threatened, or endangered in California and elsewhere
Rank 2A:	Plants presumed extirpated in California, but more common elsewhere
Rank 2B:	Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3:	Plants about which we need more information – a review list
Rank 4:	Plants of limited distribution – a watch list

[2]Invasive Status: California Invasive Plant Inventory (Cal-IPC 2006)

High:	Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.
Moderate:	Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited- moderate distribution ecologically
Limited:	Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically
Assessed:	Assessed by Cal-IPC and determined to not be an existing current threat

[3]Wetland Status: National List of Plant Species that Occur in Wetlands, Arid West Region (Lichvar et al. 2016)

OBL:	Almost always a hydrophyte, rarely in uplands
FACW:	Usually a hydrophyte, but occasionally found in uplands
FAC:	Commonly either a hydrophyte or non-hydrophyte
FACU:	Occasionally a hydrophyte, but usually found in uplands
UPL:	Rarely a hydrophyte, almost always in uplands
NL:	Rarely a hydrophyte, almost always in uplands
NI:	No information; not factored during wetland delineation

Appendix C -- Species Potential Table

Appendix C. Potential for special-status plant and wildlife species to occur in the Study Area. List compiled from the U.S. Fish and Wildlife Service (USFWS) IPaC Trust Report, Natomas Basin Habitat Conservation Plan, and a search of the California Department of Fish and Wildlife Natural Diversity Database (CDFW 2020) and the California Native Plant Society Inventory of Rare and Endangered Plants (CNPS 2020a) for the Taylor Monument, Citrus Heights, Rio Linda, Florin, Carmichael, Sacramento West, Elk Grove, Clarksburg, and Sacramento East U.S. Geological Survey 7.5' quadrangles (USGS 2018a-i). A review of historical and current satellite imagery (Google Earth 2020, Historical Aerials 2020), and a review of other CDFW and USFWS lists and publications (Shuford and Gardali 2008, Tomson et al. 2016, USFWS 2008).

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Plants				
Ferris' milk-vetch *Astragalus tener var. ferrisiae*	Rank 1B.1	Meadows and seeps (vernally mesic), valley and foothill grassland (subalkaline flats). Elevation ranges from 5 to 245 feet (2 to 75 meters). Blooms Apr-May.	**Unlikely**. The Study Area does not contain subalkaline flats or vernally mesic meadows or seeps.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.
valley brodiaea *Brodiaea rosea ssp. vallicola*	Rank 4.2	Valley and foothill grassland (swales), vernal pools. Elevation ranges from 30 to 1100 feet (10 to 335 meters). Blooms Apr-May(Jun).	**Moderate Potential.** The Study Area contains grassland habitat; however vernal pools are absent.	Protocol-level survey should be conducted in May to determine presence. See Section 7.1 for further recommendations.
bristly sedge *Carex comosa*	Rank 2B.1	Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland. Elevation ranges from 0 to 2050 feet (0 to 625 meters). Blooms May-Sep.	**Unlikely**. While the Study Area contains stream margins, these areas provide limited potential habitat due to disturbance. Additionally, no individuals were observed during the site visit conducted in June.	**Not Present.** The Study Area does not contain suitable habitat for this species. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
pappose tarplant *Centromadia parryi ssp. parryi*	Rank 1B.2	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), valley and foothill grassland (vernally mesic). Elevation ranges from 0 to 1380 feet (0 to 420 meters). Blooms May-Nov.	**Moderate Potential**. The Study Area contains vernally mesic grasslands. Additionally, this species is known to occur in disturbed areas.	**Not Observed**. The species was not observed during the June survey and is determined absent from the Study Area.
Parry's rough tarplant *Centromadia parryi ssp. rudis*	Rank 4.2	Valley and foothill grassland, vernal pools. Elevation ranges from 0 to 330 feet (0 to 100 meters). Blooms May-Oct.	**Moderate Potential**. The Study Area contains vernally mesic grasslands. Additionally, this species is known to occur in disturbed areas.	**Not Observed**. The species was not observed during the June survey and is determined absent from the Study Area.
Peruvian dodder *Cuscuta obtusiflora var. glandulosa*	Rank 2B.2	Marshes and swamps (freshwater). Elevation ranges from 45 to 920 feet (15 to 280 meters). Blooms Jul-Oct.	**Unlikely**. The Study Area does not contain freshwater marsh habitat. Additionally, no *Cuscuta* spp. was observed during the June site visit.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.
dwarf downingia *Downingia pusilla*	Rank 2B.2	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 0 to 1460 feet (1 to 445 meters). Blooms Mar-May.	**Moderate Potential**. The Study Area contains mesic grasslands in isolated depressions with known associated species.	Protocol-level survey should be conducted in April to determine presence. See Section 7.1 for further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
stinkbells *Fritillaria agrestis*	Rank 4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland. Elevation ranges from 30 to 5100 feet (10 to 1555 meters). Blooms Mar-Jun.	**Moderate Potential**. The Study Area contains grassland habitat; additionally, this species is known to occur in non-native grassland habitat.	Protocol-level survey should be conducted in April to determine presence. See Section 7.1 for further recommendations.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	SE, Rank 1B.2, Natomas Basin HCP	Marshes and swamps (lake margins), vernal pools. Elevation ranges from 30 to 7790 feet (10 to 2375 meters). Blooms Apr-Aug.	**No Potential**. The Study Area does not contain vernal pool habitat and mesic grasslands are dominated by aggressive non-native species which likely preculdes this diminutive annual species.	**Not Present.** The Study Area does not contain suitable habitat for this species. No further recommendations.
hogwallow starfish *Hesperevax caulescens*	Rank 4.2	Valley and foothill grassland (mesic, clay), vernal pools (shallow). Elevation ranges from 0 to 1655 feet (0 to 505 meters). Blooms Mar-Jun.	**No Potential**. The Study Area does not contain vernal pool habitat and mesic grasslands are dominated by aggressive non-native species which likely preculdes this diminutive annual species.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.
woolly rose-mallow *Hibiscus lasiocarpos var. occidentalis*	Rank 1B.2	Marshes and swamps (freshwater). Elevation ranges from 0 to 395 feet (0 to 120 meters). Blooms Jun-Sep.	**No Potential**. The Study Area does not contain freshwater marsh habitat.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.
Ahart's dwarf rush *Juncus leiospermus var. ahartii*	Rank 1B.2	Valley and foothill grassland (mesic). Elevation ranges from 95 to 750 feet (30 to 229 meters). Blooms Mar-May.	**No Potential**. The Study Area does not contain vernal pool habitat.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	Rank 1B.2, Natomas Basin HCP	Marshes and swamps (freshwater and brackish). Elevation ranges from 0 to 15 feet (0 to 5 meters). Blooms May-Jul (Aug-Sep).	**No Potential.** The Study Area does not contain marsh habitat.	**Not Present.** The Study Area does not contain suitable habitat for this species. No further recommendations.
legenere *Legenere limosa*	Rank 1B.1, Natomas Basin HCP	Vernal pools. Elevation ranges from 0 to 2885 feet (1 to 880 meters). Blooms Apr-Jun.	**No Potential**. The Study Area does not contain vernal pool habitat.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.
Heckard's pepper-grass *Lepidium latipes var. heckardii*	Rank 1B.2	Valley and foothill grassland (alkaline flats). Elevation ranges from 5 to 655 feet (2 to 200 meters). Blooms Mar-May.	**Unlikely**. The Study Area does not contain alkaline flats.	**Not Present.** The Study Area does not contain suitable habitat for this species. No further recommendations.
Mason's lilaeopsis *Lilaeopsis masonii*	SR, Rank 1B.1	Marshes and swamps (brackish or freshwater), riparian scrub. Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms Apr-Nov.	**No Potential**. The Study Area does not contain tidal zones along streams.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.
hoary navarretia *Navarretia eriocephala*	Rank 4.3	Cismontane woodland, valley and foothill grassland. Elevation ranges from 340 to 1310 feet (105 to 400 meters). Blooms May-Jun.	**Moderate Potential**. The Study Area contains mesic grassland habitat.	Protocol-level survey should be conducted in May to determine presence. See Section 7.1 for further recommendations.
Colusa grass *Neostapfia colusana*	FT, CE, Rank 1B.1, Natomas Basin HCP	Vernal pools (large on adobe soil). Elevation ranges from 15 to 600 feet (5 to 200 meters) Blooms May-Aug.	**No Potential.** The Study Area does not contain vernal pool habitat. Additionally, the species was not observed during the June survey.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
slender Orcutt grass *Orcuttia tenuis*	FT, SE, Rank 1B.1, Natomas Basin HCP	Vernal pools. Elevation ranges from 110 to 5775 feet (35 to 1760 meters). Blooms May-Sep(Oct).	**No Potential**. The Study Area does not contain vernal pool habitat.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.
Sacramento Orcutt grass *Orcuttia viscida*	FE, SE, Rank 1B.1, Natomas Basin HCP	Vernal pools. Elevation ranges from 95 to 330 feet (30 to 100 meters). Blooms Apr-Jul(Sep).	**No Potential**. The Study Area does not contain vernal pool habitat.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.
Sanford's arrowhead *Sagittaria sanfordii*	Rank 1B.2, Natomas Basin HCP	Marshes and swamps (assorted shallow freshwater). Elevation ranges from 0 to 2135 feet (0 to 650 meters). Blooms May-Oct(Nov).	**No Potential**. The Study Area does not contain ponds or marsh habitat.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.
Suisun Marsh aster *Symphyotrichum lentum*	Rank 1B.2	Marshes and swamps (brackish and freshwater). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms (Apr)May-Nov.	**No Potential**. The Study Area does not contain slough habitat.	**Not Present**. The Study Area does not contain suitable habitat for this species. No further recommendations.
saline clover *Trifolium hydrophilum*	Rank 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation ranges from 0 to 985 feet (0 to 300 meters). Blooms Apr-Jun.	**Moderate Potential**. The Study Area contains vernally mesic grasslands with known associated species. However, no individuals were observed during the June site visit.	Protocol-level survey should be conducted in April to determine presence. See Section 7.1 for further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mammals				
ringtail (ring-tailed cat) *Bassariscus astutus*	CFP	Is widely distributed throughout most of California, but absent from some portions of the Central Valley and northeastern California. The species is nocturnal, primarily carnivorous and is associated with a mixture of dry forest and shrubland in close association with rocky areas and riparian habitat, using hollow trees and cavities for shelter.	**No Potential.** The Study Area and adjacent areas do not contain forest, shrubland, or riparian habitats to support this species.	No further actions are recommended for this species.
American badger *Taxidea taxus*	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	**Unlikely.** Ruderal herbaceous areas within the Study Area has been regularly disked and/or lacks connectivity to expansive habitats.	No further actions are recommended for this species.
pallid bat *Antrozous pallidus*	SSC, WBWG High	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, forages along river channels. Roost sites include crevices in rocky outcrops and cliffs, caves, mines, trees and various human structures such as bridges, barns, and human-occupied as well as vacant buildings. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Moderate Potential.** This species may occasionally fly over the Study Area and may occasionally roost in the Study Area, but there are no trees that would support maternity roosts.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
western red bat *Lasiurus blossevillii*	SSC, WBWG High	This species is typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores).	**Moderate Potential.** This species may occasionally fly over the Study Area and may occasionally roost in the Study Area, but there are no trees that would support maternity roosts.	No further actions are recommended for this species.
Birds				
golden eagle *Aquila chrysaetos*	CFP, BGEPA	Resident in rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees in open areas.	**Unlikely.** Individuals may occasionally fly over the Study Area, but the Study Area does not contain any trees to support nesting and is surrounded by development, reducing the likelihood this species may even forage there.	No further actions are recommended for this species.
bald eagle *Haliaeetus leucocephalus*	SE, CFP, BGEPA	Occurs year-round in California, but primarily a winter visitor. Nests in large trees in the vicinity of larger lakes, reservoirs and rivers. Wintering habitat somewhat more variable but usually features large concentrations of waterfowl or fish.	**Unlikely.** The Study Area and surrounding areas do not contain large bodies of water to support foraging or trees near water to support nesting. This species may occasionally fly over the Study Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Swainson's hawk *Buteo swainsonii*	ST	Summer resident in the region. Forages in grasslands and nests in the immediate vicinity, often in relatively isolated, trees or tree groves. Most of the California population breeds in the Central Valley. Forages on insects and rodents, also other vertebrates.	**Moderate Potential.** Swainson's hawk have been documented to nest in proximity to the Study Area and several of the Project Areas contain trees that could be suitable for nesting Swainson's hawk.	Protocol level surveys are recommended if activities would occur in the breeding season. See Section 7 of the text for further details.
northern harrier *Circus cyaneus*	SSC	Nests and forages in grassland habitats, usually in association with coastal salt and freshwater marshes. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas. May also occur in alkali desert sinks.	**Unlikely.** The Study Area does not contain freshwater marshes with shrubby vegetation.	No further actions are recommended for this species.
white-tailed kite *Elanus leucurus*	CFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	**Moderate Potential.** The Study Area does contain trees or shrubs suitable for nesting.	Surveys for nesting white-tailed kite are recommended for sites with trees and shrubs if activities would occur in the breeding season. See Section 7 of the text for further details.
burrowing owl *Athene cunicularia*	SSC	Inhabits, dry annual or perennial grassland, desert and scrubland characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably California ground squirrel.	**Moderate Potential.** Some of the Well Sites contain burrows or burrow analogues that could support burrowing owl.	Preconstruction surveys are recommended or required. See Section 7 of the text for further details.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
short-eared owl *Asio flammeus*	SSC	Occurs year-round, but primarily as a winter visitor; breeding very restricted in most of California. Found in open, treeless areas (e.g., marshes, grasslands) with elevated sites for foraging perches and dense herbaceous vegetation for roosting and nesting. Preys mostly on small mammals, particularly voles.	**Unlikely.** The Study Area and adjacent areas do not contain marshes to support nesting for this species, and because the Study Area is surrounded by development the quality of the foraging habitat is diminished.	No further actions are recommended for this species.
long-eared owl *Asio otus*	SSC	Occurs year-round in California. Nests in trees in a variety of woodland habitats, including oak and riparian, as well as tree groves. Requires adjacent open land with rodents for foraging, and the presence of old nests of larger birds (hawks, crows, magpies) for breeding.	**Unlikely.** The Study Area and adjacent areas do not contain woodland or mature riparian habitats to support nesting for this species, and because the Study Area is surrounded by development, the quality of the foraging habitat is diminished.	No further actions are recommended for this species.
purple martin *Progne subis*	SSC	Inhabits woodlands and low elevation coniferous forests. Nests in old woodpecker cavities and human-made structures. Nest is often located in tall, isolated tree or snag.	**Unlikely.** The Study Area and adjacent areas do not contain woodland, forest, or human-made structures to support nesting for this species. This species may occasionally fly over or forage in the Study Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
bank swallow *Riparia riparia*	ST	Migrant in riparian and other lowland habitats in western California. Colonial nester in riparian areas with vertical cliffs and bands with fine-textured or fine-textured sandy soils near streams, rivers, lakes or the ocean. Historical range in southern and central areas of California has been eliminated by loss of nesting habitat due to flood and erosion-control projects, but currently is known to breed in Siskiyou, Shasta, and Lassen Cos., and along Sacramento River from Shasta Co. south to Yolo Co.	**Unlikely.** The Study Area and adjacent areas do not contain cliffs or riparian habitats necessary to support nesting for this species. This species may occasionally forage or fly over the Study Area.	No further actions are recommended for this species.
loggerhead shrike *Lanius ludovicianus*	SSC	Found in broken woodlands, savannah, pinyon-juniper, Joshua tree and riparian woodlands, and desert oases, scrub, and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	**Unlikely.** Although the Study Area contains limited potential foraging habitat for this species, it the Well Sites are limited in size and are mostly embedded in an urban setting.	No further actions are recommended for this species.
California black rail *Laterallus jamaicensis coturniculus*	ST, CFP	Year-round resident in marshes (saline to freshwater) with dense vegetation within four inches of the ground. Prefers larger, undisturbed marshes that have an extensive upper zone and are close to a major water source. Extremely secretive and cryptic.	**Unlikely.** The Study Area does not contain marsh habitat to support this species.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
least bell's vireo *Vireo bellii pusillus*	FE, SE	Summer resident. Breeds in riparian habitat along perennial or intermittent rivers and creeks; prefers a multi-tiered canopy with dense early successional vegetation in the understory. Willows, mulefat and other understory species are typically used for nesting.	**No Potential.** The Study Area and adjacent areas do not contain contiguous riparian habitat to support this species, and the regional documented occurrences of this species in vicinity the past 100 years are west of the Study Area in the Yolo Bypass Wildlife Refuge (eBird 2020, CDFW 2020).	No further actions are recommended for this species.
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT, SE	Summer resident, breeding in dense riparian forests and jungles, typically with early successional vegetation present. Utilizes densely foliaged deciduous trees and shrubs. Eats mostly caterpillars. Current breeding distribution within California very restricted.	**No Potential.** The Study Area does not contain dense riparian forest to support this species.	No further actions are recommended for this species.
yellow-breasted chat *Icteria virens*	SSC	Summer resident, occurring in riparian areas with an open canopy, very dense understory, and trees for song perches. Nests in thickets of willow, blackberry, and wild grape.	**Unlikely.** The Study Area does not contain riparian environments to support nesting for this species. This species may occasionally fly over the Study Area, but it will not nest there.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
tricolored blackbird *Agelaius tricolor*	ST, SSC	Usually nests over or near freshwater in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall herbs. Nesting area must be large enough to support about 50 pairs.	**Unlikely.** The Study Area does not contain and is not adjacent to wetlands with dense emergent vegetation to support nesting for this species. This species may occasionally fly over the Study Area, but it will not nest there.	No further actions are recommended for this species.
grasshopper sparrow *Ammodramus savannarum*	SSC	Summer resident in the region. Breeds in open grassland habitats, generally with low- to moderate-height grasses and scattered shrubs.	**Unlikely.** The Study Area does not contain open grasslands in their natural state that would support nesting grasshopper sparrows.	No further actions are recommended for this species.
song sparrow (Modesto Population) *Melospiza melodia*	SSC	Restricted to the Sacramento and extreme northern San Joaquin Valleys from Colusa County south to Stanislaus County. Associated with woody riparian habitat and freshwater marshes.	**Unlikely.** The Study Area does not contain riparian or wetland habitat with emergent vegetation to the extent needed to support this species.	No further actions are recommended for this species.
Reptiles and Amphibians				
western spadefoot *Spea (=Scaphiopus) hammondii*	SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Shallow temporary pools formed by winter rains are essential for breeding and egg-laying.	**Unlikely.** The Well Sites are nearly all located in an urban setting surrounded by roads. Furthermore, they are managed by mowing or disking.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California red-legged frog *Rana draytonii*	FT, SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Must have access to estivation habitat.	**No Potential.** California red-legged frog is considered extirpated in the region. There are no documented occurrences of this species within 5 miles of the Study Area (CDFW 2020).	No further actions are recommended for this species.
California tiger salamander *Ambystoma californiense*	FT, ST	Populations in Santa Barbara and Sonoma Counties are currently listed as endangered, and the Central Valley populations are listed as threatened. Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal burrows as estivation habitat.	**No Potential.** This species generally does not occur north of the American River. There are no documented occurrences of this species near the Study Area (CDFW 2020).	No further actions are recommended for this species.
giant garter snake *Thamnophis gigas*	FT, ST	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the garter snakes in California.	**Unlikely.** The Study Area does not contain suitable habitat (upland and aquatic habitat without barriers between them) to support this species.	Because one of the sites is located near an extant population in the NBHCP area, some preconstruction surveys for that Project Area may be required. See Section 7 of the text for more information.
western pond turtle *Actinemys marmorata*	SSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter.	**Unlikely.** The majority of the Study Area does not contain aquatic habitat to support turtles and the Well Sites are in an urban setting and do not have connectivity to potentially occupied areas.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Fishes				
longfin smelt *Spirinchus thaleichthys*	FC, ST	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater.	**No Potential.** The Study Area does not contain any aquatic environments to support fish.	No further actions are recommended for this species.
Sacramento perch *Archoplites interruptus*	SSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefer warm water. Aquatic vegetation is essential for young. Tolerate wide range of physio-chemical water conditions.	**No Potential.** The Study Area does not contain any aquatic environments to support fish.	No further actions are recommended for this species.
Sacramento splittail *Pogonichthys macrolepidotus*	SSC	Endemic to the lakes and rivers of the Central Valley, but now confined to the Sacramento Delta, Suisun Bay and associated marshes. Occurs in slow-moving river sections and dead end sloughs. Requires flooded vegetation for spawning and foraging for young. Splittail are primarily freshwater fish, but are tolerant of moderate salinity and can live in water where salinity levels reach of 10-18 parts per thousand.	**No Potential.** The Study Area does not contain any aquatic environments to support fish.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Chinook salmon - central valley spring-run ESU *Oncorhynchus tshawytscha*	FT, ST	Occurs in the Feather River and the Sacramento River and its tributaries, including Butte, Mill, Deer, Antelope and Beegum Creeks. Adults enter the Sacramento River from late March through September. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams from mid-August through early October. Juveniles migrate soon after emergence as young-of-the-year, or remain in freshwater and migrate as yearlings.	**No Potential.** The Study Area does not contain any aquatic environments to support fish.	No further actions are recommended for this species.
Chinook salmon – Sacramento winter-run ESU *Oncorhynchus tshawytscha*	FE, SE	Occurs in the Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams. Requires clean, cold water over gravel beds with water temperatures between 6 and 14 degrees C for spawning. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles typically migrate to the ocean soon after emergence from the gravel.	**No Potential.** The Study Area does not contain any aquatic environments to support fish.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
steelhead - central valley DPS *Oncorhynchus mykiss irideus*	FT	The Central Valley ESU includes all naturally spawned populations (and their progeny) in the Sacramento and San Joaquin Rivers and their tributaries, excluding San Francisco and San Pablo bays and their tributaries. Preferred spawning habitat for steelhead is in cool to cold perennial streams with high dissolved oxygen levels and fast flowing water. Abundant riffle areas for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding.	**No Potential.** The Study Area does not contain any aquatic environments to support fish.	No further actions are recommended for this species.
Invertebrates				
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	Occurs only in the central valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberry 2 to 8 inches in diameter; some preference shown for "stressed" elderberry.	**Moderate Potential.** *Sambucus* plants were observed during the June 2020 site visits, but only at a few sites.	Surveys to establish absence of Valley elderberry longhorn beetle are recommended and described in section 7.
vernal pool fairy shrimp *Branchinecta lynchi*	FT	Endemic to the grasslands of the Central Valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabits small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**Moderate Potential.** Wetlands that may have potential to support vernal pool fairy shrimp were identified at some sites.	Avoidance of potentially occupied wetlands or protocol surveys to establish absence of the species are recommended. See section 7 for more details.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
vernal pool tadpole shrimp *Lepidurus packardi*	FE	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**No Potential.** The Study Area does not contain vernal pools or other seasonal pools with inundation periods sufficient to support this species.	No further actions are recommended for this species.

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
FC	Federal Candidate
SE	State Endangered
ST	State Threatened
SC	State Candidate
SSC	CDFW Species of Special Concern
CFP	CDFW Fully Protected Animal
WBWG	Western Bat Working Group (High or Medium) Priority
BGEPA	Bald and Golden Eagle Protection Act
Rank 1A	CRPR Rank 1A: Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	CRPR Rank 1B: Plants rare, threatened or endangered in California and elsewhere
Rank 2B	CRPR Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3	CRPR Rank 3: Plants about which CNPS needs more information (a review list)
Rank 4	CRPR Rank 4: Plants of limited distribution – a watch list

Appendix D -- Photos

Photo 1. Seasonal wetland located at Well 2.

Photo 2. Ephemeral ditch located at Well 2.

Photo 3. Artificial pond located at Well 35.

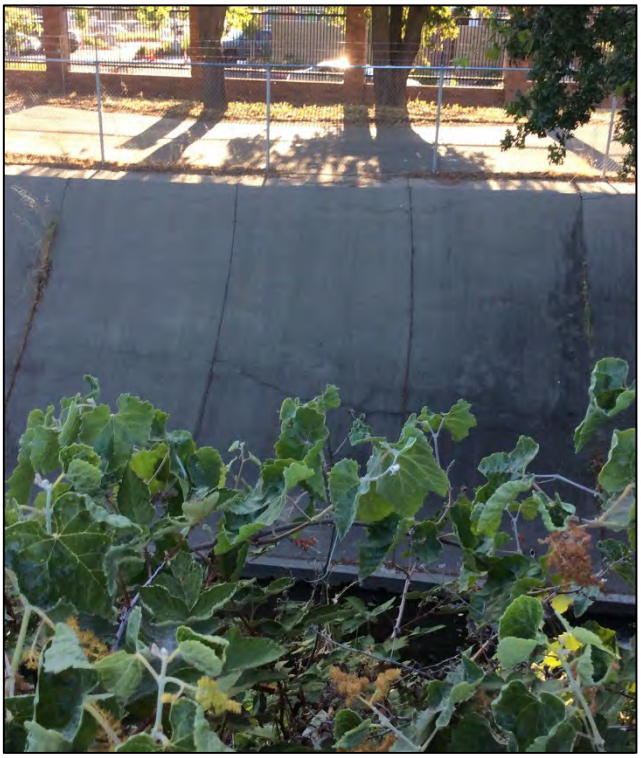

Photo 4. Drainage canal at Well 24.

Photo 5. One of the potential wetlands located at Well 37.

Photo 6. Drainage canal located at Well 39.

Photo 7. Drainage canal located at Well 15.

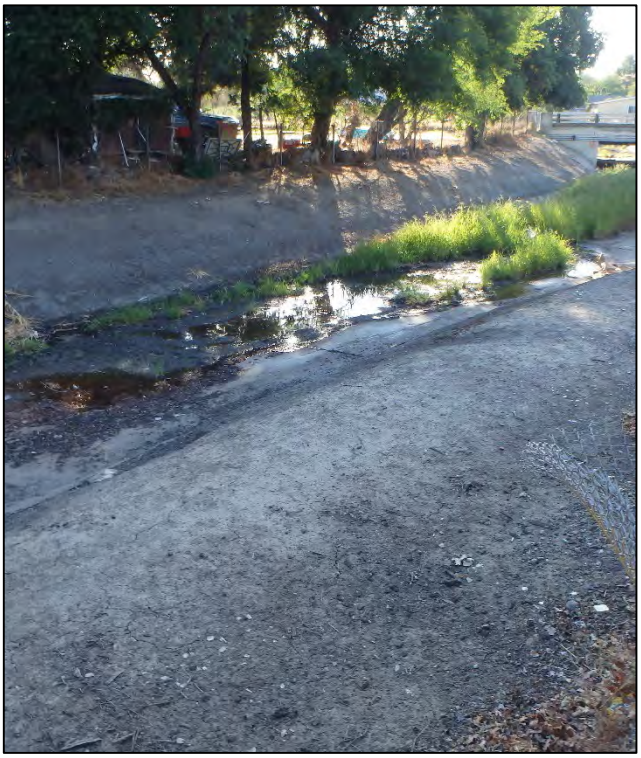

Photo 8. Drainage canal located at Well 30.

Photo 9. Wetland located in drainage canal at Well 30.

Photo 10. Potential wetland located at Well 29.

Photo 11. Example of potential bat tree. This tree is located at Well 27.

Photo 12. Example of landscape areas within the Study Area. Each of the trees are also considered a City Tree.

Photo 13. Example of non-native grassland within the Study Area.

Photo 14. Example of developed areas within the Study Area.

Photo 15. Example of non-native grassland within the Study Area.

Photo 16. Example of potential Burrowing owl habitat. This photograph is taken at Well 7.