



- | | | | |
|---|------------------------------|---|--------------------------------|
| 1, <i>Blennosperma</i> vernal pool andrenid bee | 6, Conservancy fairy shrimp | 11, longfin smelt | 16, tricolored blackbird |
| 2, burrowing owl | 7, Delta green ground beetle | 12, mountain plover | 17, vernal pool fairy shrimp |
| 3, California black rail | 8, Delta smelt | 13, song sparrow ("Modesto" population) | 18, vernal pool tadpole shrimp |
| 4, California linderella | 9, giant gartersnake | 14, steelhead - Central Valley DPS | 19, western bumble bee |
| 5, California tiger salamander | 10, grasshopper sparrow | 15, Swainson's hawk | |

Figure 5. Special-Status Wildlife Species Documented within 5 miles of the Study Area



0 1 2 4
Miles

Lookout Slough Restoration Project



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Partners**

Prepared by:

Map Prepared Date: 12/28/2018
Map Prepared By: pkobylarz
Base Source: Esri - Dig. Globe
Data Source(s): WRA, USDA



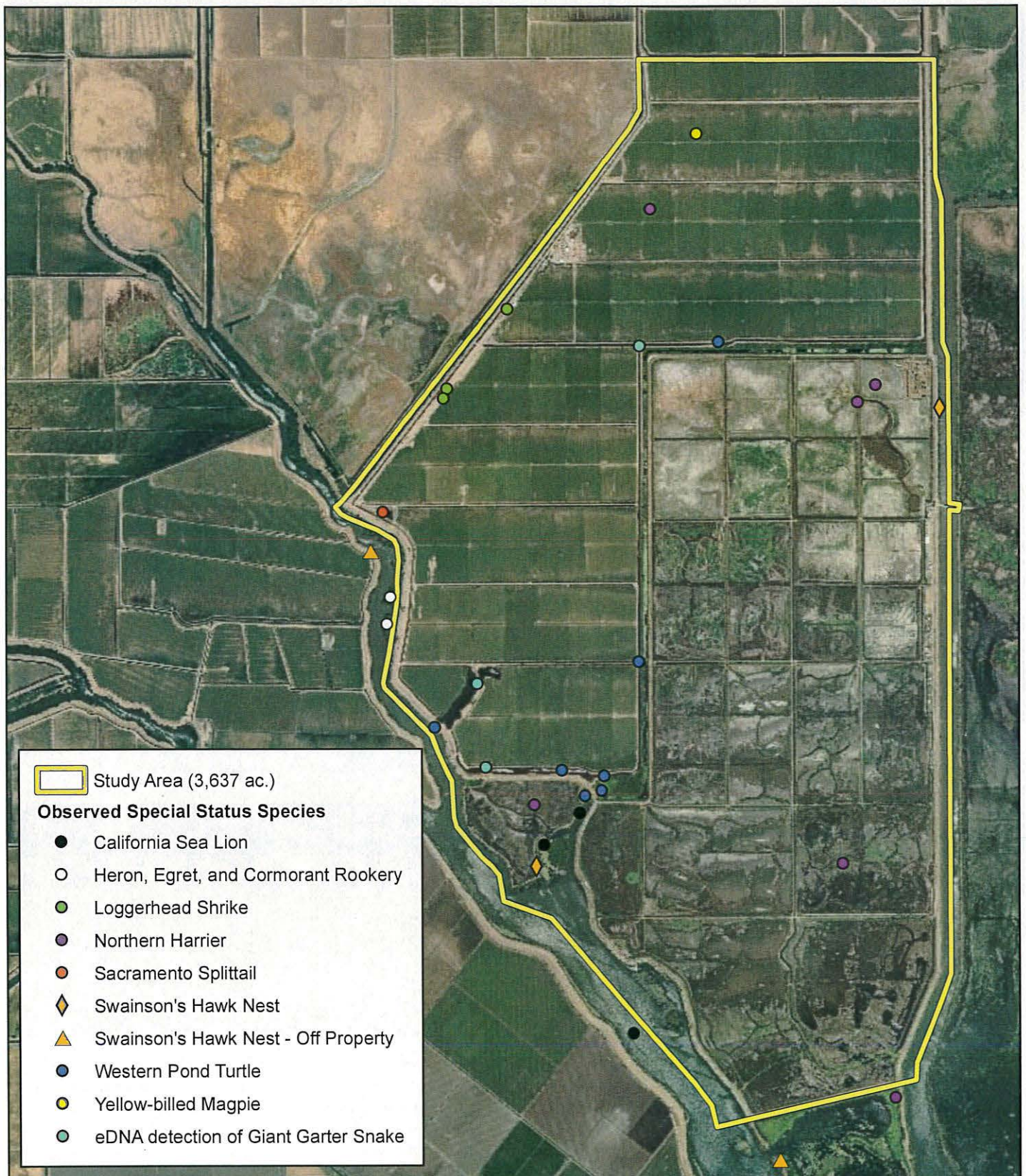
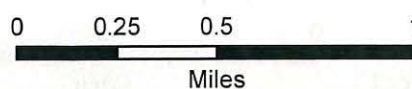


Figure 6. Special Status Species Observed within the Study Area



Lookout Slough Restoration Project



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Prepared by:



Map Prepared Date: 2/27/2019
Map Prepared By: pkobylarz
Base Source: Esri - Dig. Globe
Data Source(s): WRA, USDA

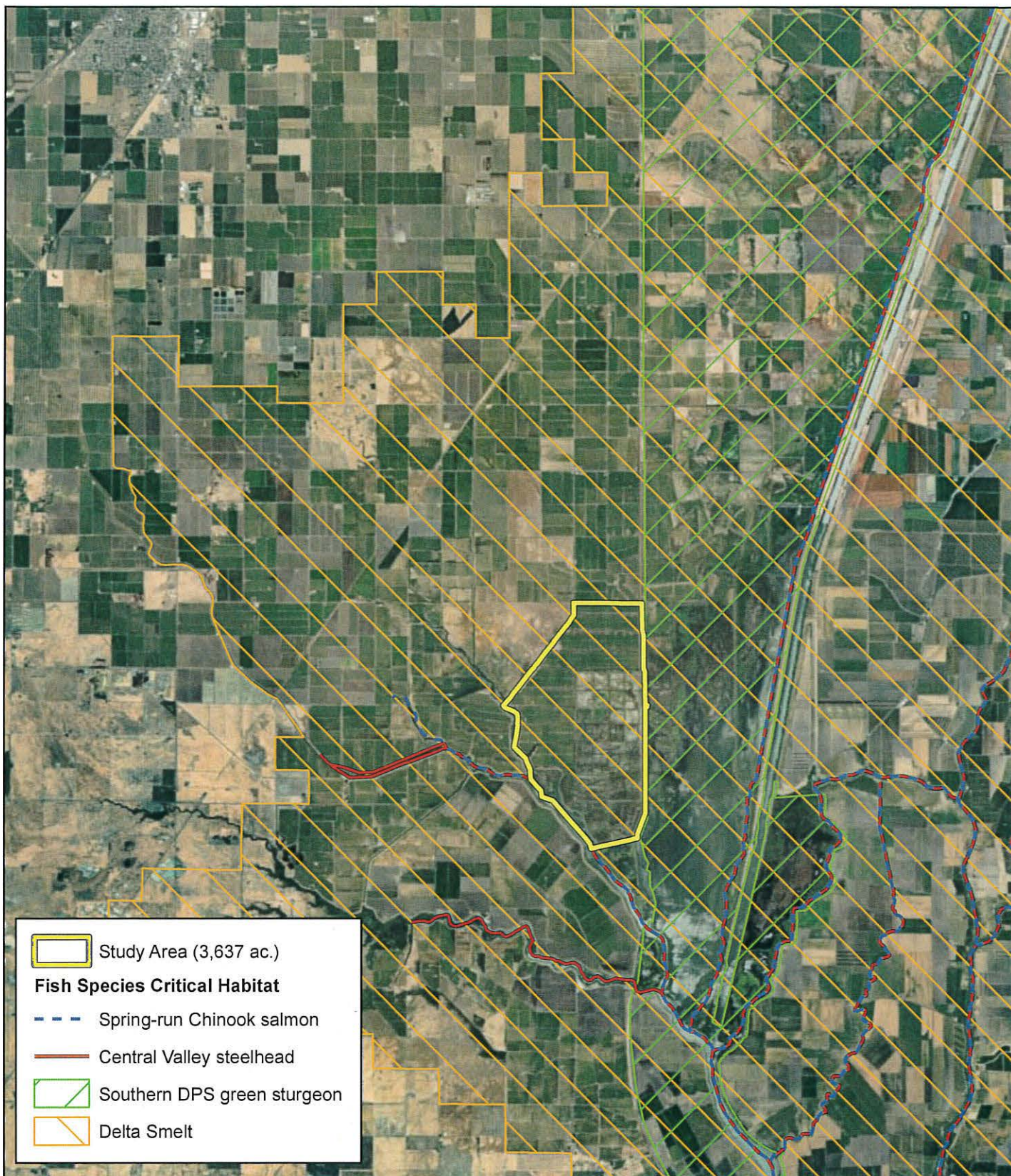


Figure 7. Critical Habitat Within and Adjacent to the Study Area

Lookout Slough Restoration Project



**Ecosystem
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Prepared by:



Map Prepared Date: 12/28/2018
Map Prepared By: pkobylarz
Base Source: Esri - Dig. Globe
Data Source(s): WRA

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APPENDIX B

LIST OF OBSERVED PLANT AND WILDLIFE SPECIES WITHIN THE STUDY AREA

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Appendix B. List of Observed Plant and Wildlife Species within the Study Area

Scientific Name	Common Name	Origin	Form	Rarity Status*	Cal-IPC Status*	Wetland Status (AW 2016)**
<i>Abutilon theophrasti</i>	Velvet leaf	non-native	annual herb	-	-	UPL
<i>Acer negundo</i>	Boxelder	native	tree	-	-	FACW
<i>Agrostis avenacea</i>	Pacific bentgrass	non-native (invasive)	perennial grass	-	Limited	FACW
<i>Alisma lanceolatum</i>	Water plantain	non-native	perennial herb (aquatic)	-	-	OBL
<i>Alnus rhombifolia</i>	White alder	native	tree	-	-	FACW
<i>Amaranthus albus</i>	Tumbleweed	non-native	annual herb	-	-	FACU
<i>Amaranthus californicus</i>	California amaranth	native	annual herb	-	-	FACW
<i>Ambrosia psilostachya</i>	Ragweed	native	perennial herb	-	-	FACU
<i>Ammannia sp.</i>	Ammannia	native	annual herb	-	-	OBL
<i>Ammi visnaga</i>	Bisnaga	non-native	annual, biennial herb	-	-	UPL
<i>Apocynum cannabinum</i>	Indian hemp	native	perennial herb	-	-	FAC
<i>Artemisia douglasiana</i>	California mugwort	native	perennial herb	-	-	FAC
<i>Arundo donax</i>	Giant reed	non-native (invasive)	perennial grass	-	High	FACW
<i>Asclepias fascicularis</i>	Milkweed	native	perennial herb	-	-	FAC
<i>Asparagus officinalis ssp. officinalis</i>	Asparagus	non-native	perennial herb	-	-	FACU
<i>Atriplex prostrata</i>	Fat-hen	non-native	annual herb	-	-	FACW
<i>Atriplex semibaccata</i>	Australian saltbush	non-native (invasive)	perennial herb	-	Moderate	FAC
<i>Atriplex truncata</i>	Wedgescale	native	annual herb	-	-	FACU
<i>Avena sp.</i>	Wild oat	non-native	annual grass	-	-	UPL
<i>Avena barbata</i>	Slim oat	non-native (invasive)	annual grass	-	Moderate	UPL

Scientific Name	Common Name	Origin	Form	Rarity Status*	Cal-IPC Status*	Wetland Status (AW 2016)**
<i>Azolla filiculoides</i>	Mosquito fern	native	fern	-	-	OBL
<i>Baccharis glutinosa</i>	Salt Marsh baccharis	native	perennial herb	-	-	FACW
<i>Baccharis pilularis</i>	Coyote brush	native	shrub	-	-	UPL
<i>Bidens frondosa</i>	Sticktight	native	annual herb	-	-	FACW
<i>Bolboschoenus maritimus</i> ssp. <i>paludosus</i>	Saltmarsh bulrush	native	perennial grasslike herb	-	-	OBL
<i>Brassica nigra</i>	Black mustard	non-native (invasive)	annual herb	-	Moderate	UPL
<i>Bromus diandrus</i>	Ripgut brome	non-native (invasive)	annual grass	-	Moderate	UPL
<i>Bromus hordeaceus</i>	Soft chess	non-native (invasive)	annual grass	-	Limited	FACU
<i>Callitriche</i> sp.	Water starwort	-	-	-	-	OBL
<i>Carduus pycnocephalus</i> ssp. <i>pycnocephalus</i>	Italian thistle	non-native	annual herb	-	-	UPL
<i>Carex barbarae</i>	Valley sedge	native	perennial grasslike herb	-	-	FAC
<i>Centaurea solstitialis</i>	Yellow starthistle	non-native (invasive)	annual herb	-	High	UPL
<i>Centromadia parryi</i>	Pappose tarweed	native	annual herb	-	-	FACW
<i>Cephalanthus occidentalis</i>	Common buttonbush	native	shrub	-	-	OBL
<i>Ceratophyllum demersum</i>	Hornwort	native	perennial herb	-	-	OBL
<i>Chenopodium album</i>	Lambs quarters	non-native	annual herb	-	-	FACU
<i>Cicuta maculata</i>	Water hemlock	native	perennial herb	-	-	OBL
<i>Cirsium vulgare</i>	Bullthistle	non-native (invasive)	perennial herb	-	Moderate	FACU
<i>Conium maculatum</i>	Poison hemlock	non-native (invasive)	perennial herb	-	Moderate	FACW
<i>Convolvulus arvensis</i>	Field bindweed	non-native (invasive)	perennial herb, vine	-	-	UPL

Scientific Name	Common Name	Origin	Form	Rarity Status*	Cal-IPC Status*	Wetland Status (AW 2016)**
<i>Cotula coronopifolia</i>	Brass buttons	non-native (invasive)	perennial herb	-	Limited	OBL
<i>Cressa truxillensis</i>	Alkali weed	native	perennial herb	-	-	FACW
<i>Crypsis schoenoides</i>	Swamp grass	non-native	annual grass	-	-	FACW
<i>Crypsis vaginiflora</i>	African prickly grass	non-native	annual grass	-	-	OBL
<i>Cuscuta californica</i>	California dodder	native	annual herb, vine (parasitic)	-	-	UPL
<i>Cynodon dactylon</i>	Bermuda grass	non-native (invasive)	perennial grass	-	Moderate	FACU
<i>Cyperus eragrostis</i>	Tall cyperus	native	perennial grasslike herb	-	-	FACW
<i>Daucus carota</i>	Carrot	non-native (invasive)	perennial herb	-	-	UPL
<i>Daucus pusillus</i>	Wild carrot	native	annual herb	-	-	UPL
<i>Digitaria sanguinalis</i>	Crabgrass	non-native	annual grass	-	-	FACU
<i>Distichlis spicata</i>	Salt grass	native	perennial grass	-	-	FAC
<i>Echinodorus berteroi</i>	Burhead	native	perennial herb (aquatic)	-	-	OBL
<i>Egeria densa</i>	Brazilian water weed	non-native (invasive)	perennial herb	-	High	OBL
<i>Eichhornia crassipes</i>	Water hyacinth	non-native (invasive)	perennial herb	-	High	OBL
<i>Eleocharis macrostachya</i>	Spike rush	native	perennial grasslike herb	-	-	OBL
<i>Elymus glaucus</i>	Blue wildrye	native	perennial grass	-	-	FACU
<i>Elymus ponticus</i>	Tall wheat grass	non-native	perennial grass	-	-	UPL
<i>Elymus triticoides</i>	Beardless wild rye	native	perennial grass	-	-	FAC
<i>Epilobium brachycarpum</i>	Willow herb	native	annual herb	-	-	UPL
<i>Erigeron bonariensis</i>	Flax-leaved horseweed	non-native	annual herb	-	-	FACU

Scientific Name	Common Name	Origin	Form	Rarity Status*	Cal-IPC Status*	Wetland Status (AW 2016)**
<i>Erigeron canadensis</i>	Canada horseweed	native	annual herb	-	-	FACU
<i>Erodium cicutarium</i>	Coastal heron's bill	non-native (invasive)	annual herb	-	Limited	UPL
<i>Erodium moschatum</i>	Whitestem filaree	non-native (invasive)	annual herb	-	-	UPL
<i>Eucalyptus camaldulensis</i>	Red gum	non-native (invasive)	tree	-	Limited	FAC
<i>Eucalyptus globulus</i>	Blue gum	non-native (invasive)	tree	-	Limited	UPL
<i>Eucalyptus sideroxylon</i>	Red iron bark	non-native	tree	-	-	UPL
<i>Euthamia occidentalis</i>	Western goldenrod	native	perennial herb	-	-	FACW
<i>Festuca arundinacea</i>	Reed fescue	non-native (invasive)	perennial grass	-	Moderate	FACU
<i>Festuca perennis</i>	Italian rye grass	non-native	annual, perennial grass	-	-	FAC
<i>Ficus carica</i>	Common fig	non-native (invasive)	tree	-	Moderate	FACU
<i>Foeniculum vulgare</i>	Fennel	non-native (invasive)	perennial herb	-	High	UPL
<i>Frankenia salina</i>	Yerba reuma, alkali heath	native	perennial herb	-	-	FACW
<i>Geranium dissectum</i>	Wild geranium	non-native (invasive)	annual herb	-	Limited	UPL
<i>Helenium bigelovii</i>	Bigelow's sneezeweed	native	perennial herb	-	-	FACW
<i>Helenium puberulum</i>	Sneezeweed	native	perennial herb	-	-	FACW
<i>Helianthus annuus</i>	Hairy leaved sunflower	native	annual herb	-	-	FACU
<i>Heliotropium curassavicum</i> var. <i>oculatum</i>	Seaside heliotrope	native	perennial herb	-	-	FACU
<i>Helminthotheca echioides</i>	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	-	-	FAC
<i>Hirschfeldia incana</i>	Mustard	non-native (invasive)	perennial herb	-	Moderate	UPL

Scientific Name	Common Name	Origin	Form	Rarity Status*	Cal-IPC Status*	Wetland Status (AW 2016)**
<i>Hordeum brachyantherum</i>	Meadow barley	native	perennial grass	-	-	FACW
<i>Hordeum jubatum</i> ssp. <i>jubatum</i>	Squirreltail barley	native	perennial grass	-	-	FAC
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Barley	non-native	annual grass	-	-	FAC
<i>Hordeum murinum</i>	Foxtail barley	non-native (invasive)	annual grass	-	-	FACU
<i>Hydrocotyle</i> sp.	Pennywort	-	-	-	-	OBL
<i>Juglans hindsii</i>	Northern California black walnut	native	tree	Rank 1B.1	-	FAC
<i>Juncus balticus</i> ssp. <i>ater</i>	Baltic rush	native	perennial grasslike herb	-	-	FACW
<i>Juncus bufonius</i>	Common toad rush	native	annual grasslike herb	-	-	FACW
<i>Juncus effusus</i>	Common bog rush	native	perennial grasslike herb	-	-	FACW
<i>Juncus mexicanus</i>	Mexican rush	native	perennial grasslike herb	-	-	FACW
<i>Juncus patens</i>	Rush	native	perennial grasslike herb	-	-	FACW
<i>Juncus xiphioides</i>	Iris leaved rush	native	perennial grasslike herb	-	-	OBL
<i>Kickxia elatine</i>	Sharp point fluellin	non-native	perennial herb	-	-	UPL
<i>Kickxia spuria</i>	Fluellin	non-native	perennial herb	-	-	UPL
<i>Lactuca saligna</i>	Willow lettuce	non-native	annual herb	-	-	UPL
<i>Lactuca serriola</i>	Prickly lettuce	non-native (invasive)	annual herb	-	-	FACU
<i>Lathyrus jepsonii</i> var. <i>californicus</i>	California tule pea	native	perennial herb	-	-	OBL
<i>Lemna</i> sp.	Duckweed	native	perennial herb	-	-	OBL
<i>Lepidium latifolium</i>	Perennial pepperweed	non-native (invasive)	perennial herb	-	High	FAC

Scientific Name	Common Name	Origin	Form	Rarity Status*	Cal-IPC Status*	Wetland Status (AW 2016)**
<i>Leptochloa fusca</i>	Sprangletop	native	annual grass	-	-	FACW
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	native	perennial herb	SR, Rank 1B.1	-	OBL
<i>Limonium sp.</i>	Sea lavender	-	-	-	-	-
<i>Lotus corniculatus</i>	Bird's foot trefoil	non-native (invasive)	perennial herb	-	-	FAC
<i>Ludwigia hexapetala</i>	Six petal water primrose	non-native (invasive)	perennial herb	-	High	OBL
<i>Ludwigia peploides</i>	Marsh purslane	native	perennial herb	-	High	OBL
<i>Lythrum californicum</i>	Common loosestrife	native	perennial herb	-	-	OBL
<i>Lythrum hyssopifolia</i>	Hyssop loosestrife	non-native	annual, perennial herb	-	-	OBL
<i>Maclura pomifera</i>	Osage orange	non-native	tree, shrub	-	-	UPL
<i>Malva nicaeensis</i>	Bull mallow	non-native	annual herb	-	-	UPL
<i>Malva pseudolavatera</i>	Cretan mallow	non-native	shrub	-	-	UPL
<i>Malvella leprosa</i>	Alkali mallow	native	perennial herb	-	-	FACU
<i>Marrubium vulgare</i>	White horehound	non-native (invasive)	perennial herb	-	Limited	FACU
<i>Medicago polymorpha</i>	California burclover	non-native (invasive)	annual herb	-	Limited	FACU
<i>Medicago sativa</i>	Alfalfa	non-native	perennial herb	-	-	UPL
<i>Melilotus albus</i>	White sweetclover	non-native (invasive)	annual, biennial herb	-	-	UPL
<i>Melilotus indicus</i>	Annual yellow sweetclover	non-native	annual herb	-	-	FACU
<i>Mentha pulegium</i>	Pennyroyal	non-native (invasive)	perennial herb	-	Moderate	OBL
<i>Morus alba</i>	Mulberry	non-native	tree	-	-	FACU
<i>Nerium oleander</i>	Oleander	non-native (invasive)	tree	-	-	UPL
<i>Paspalum dilatatum</i>	Dallis grass	non-native	perennial grass	-	-	FAC

Scientific Name	Common Name	Origin	Form	Rarity Status*	Cal-IPC Status*	Wetland Status (AW 2016)**
<i>Paspalum distichum</i>	Knot grass	native	perennial grass	-	-	FACW
<i>Persicaria amphibia</i>	Water smartweed	native	perennial herb (aquatic)	-	-	OBL
<i>Persicaria lapathifolia</i>	Common knotweed	native	annual herb	-	-	FACW
<i>Persicaria punctata</i>	Dotted smartweed	native	perennial herb	-	-	OBL
<i>Phalaris aquatica</i>	Harding grass	non-native (invasive)	perennial grass	-	Moderate	FACU
<i>Phalaris paradoxa</i>	Hood canarygrass	non-native	annual grass	-	-	FAC
<i>Phoenix canariensis</i>	Canary island date palm	non-native (invasive)	tree	-	Limited	UPL
<i>Phoradendron leucarpum</i>	American mistletoe	native	shrub (parasitic)	-	-	UPL
<i>Phragmites australis</i>	Common reed	native	perennial grass	-	-	FACW
<i>Phyla nodiflora</i>	Common lippia	native	perennial herb	-	-	FACW
<i>Plantago lanceolata</i>	Ribwort	non-native (invasive)	perennial herb	-	Limited	FAC
<i>Plantago major</i>	Common plantain	non-native	perennial herb	-	-	FAC
<i>Platanus racemosa</i>	California sycamore	native	tree	-	-	FAC
<i>Pleuropogon californicus</i>	Semaphore grass	native	perennial grass (rhizomatous)	-	-	OBL
<i>Poa annua</i>	Annual blue grass	non-native	annual grass	-	-	FAC
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	non-native (invasive)	perennial grass	-	-	FAC
<i>Polygonum sp.</i>	Knotweed	-	-	-	-	-
<i>Polygonum aviculare</i>	Prostrate knotweed	non-native	annual, perennial herb	-	-	FAC
<i>Polypogon australis</i>	Chilean beard grass	non-native	perennial grass	-	-	FACW
<i>Polypogon monspeliensis</i>	Annual beard grass	non-native (invasive)	annual grass	-	Limited	FACW

Scientific Name	Common Name	Origin	Form	Rarity Status*	Cal-IPC Status*	Wetland Status (AW 2016)**
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Cottonwood	native	tree	-	-	FAC
<i>Quercus lobata</i>	Valley oak	native	tree	-	-	FACU
<i>Ranunculus californicus</i>	Common buttercup	native	perennial herb	-	-	FACU
<i>Ranunculus muricatus</i>	Buttercup	non-native	annual, perennial herb	-	-	FACW
<i>Raphanus sativus</i>	Jointed charlock	non-native (invasive)	annual, biennial herb	-	Limited	UPL
<i>Rorippa palustris</i>	Bog yellow cress	native	annual, perennial herb	-	-	OBL
<i>Rosa californica</i>	California wild rose	native	shrub	-	-	FAC
<i>Rubus ameniacus</i>	Himalayan blackberry	non-native (invasive)	shrub	-	High	FAC
<i>Rubus ursinus</i>	California blackberry	native	vine, shrub	-	-	FAC
<i>Rumex acetosella</i>	Sheep sorrel	non-native (invasive)	perennial herb	-	Moderate	FACU
<i>Rumex crispus</i>	Curly dock	non-native (invasive)	perennial herb	-	Limited	FAC
<i>Rumex dentatus</i>	Toothed dock	non-native	annual, perennial herb	-	-	FACW
<i>Rumex fueginus</i>	Golden dock	native	annual, perennial herb	-	-	FACW
<i>Rumex pulcher</i>	Fiddleleaf dock	non-native	perennial herb	-	-	FAC
<i>Sagittaria</i> sp.	Arrowhead	-	perennial herb	-	-	OBL
<i>Salix exigua</i>	Narrowleaf willow	native	tree, shrub	-	-	FACW
<i>Salix gooddingii</i>	Gooding's willow	native	tree	-	-	FACW
<i>Salix laevigata</i>	Polished willow	native	tree	-	-	FACW
<i>Salix lasiolepis</i>	Arroyo willow	native	tree, shrub	-	-	FACW
<i>Sambucus nigra</i> ssp. <i>caerulea</i>	Blue elderberry	native	shrub	-	-	FAC

Scientific Name	Common Name	Origin	Form	Rarity Status*	Cal-IPC Status*	Wetland Status (AW 2016)**
<i>Samolus parviflorus</i>	Water pimpernel	native	perennial herb	-	-	OBL
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i>	Tule	native	perennial grasslike herb	-	-	OBL
<i>Schoenoplectus californicus</i>	California bulrush	native	perennial grasslike herb	-	-	OBL
<i>Setaria</i> sp.	Bristlegrass	-	annual, perennial grass	-	-	-
<i>Silybum marianum</i>	Milk thistle	non-native (invasive)	annual, perennial herb	-	Limited	UPL
<i>Solanum</i> sp.	Nightshade	-	-	-	-	-
<i>Sonchus asper</i> ssp. <i>asper</i>	Sow thistle	non-native (invasive)	annual herb	-	-	FAC
<i>Sonchus oleraceus</i>	Sow thistle	non-native	annual herb	-	-	UPL
<i>Sorghum halepense</i>	Johnsongrass	non-native (invasive)	perennial grass	-	-	FACU
<i>Sparganium</i> sp.	Bur-weed	native	perennial herb	-	-	OBL
<i>Spergularia rubra</i>	Purple sand spurry	non-native	annual, perennial herb	-	-	FAC
<i>Sporobolus indicus</i>	Smutgrass	non-native	perennial grass	-	-	FACU
<i>Stachys albens</i>	Cobwebby hedge nettle	native	perennial herb	-	-	OBL
<i>Symphyotrichum lentum</i>	Suisun marsh aster	native	perennial herb (rhizomatous)	Rank 1B.2	-	OBL
<i>Symphyotrichum subulatum</i>	Eastern annual saltmarsh aster	native	annual herb	-	-	OBL
<i>Tamarix</i> sp.	Tamarisk	-	-	-	-	FAC
<i>Toxicodendron diversilobum</i>	Poison oak	native	vine, shrub	-	-	FACU
<i>Tragopogon porrifolius</i>	Salsify	non-native	perennial herb	-	-	UPL
<i>Tribulus terrestris</i>	Puncture vine	non-native (invasive)	annual herb	-	-	UPL
<i>Trifolium fragiferum</i>	Strawberry clover	non-native	perennial herb	-	-	FAC

Scientific Name	Common Name	Origin	Form	Rarity Status*	Cal-IPC Status*	Wetland Status (AW 2016)**
<i>Trifolium sp.</i>	Clover	-	-	-	-	-
<i>Trifolium repens</i>	White clover	non-native	perennial herb	-	-	FACU
<i>Typha angustifolia</i>	Narrow leaf cattail	non-native	perennial herb (aquatic)	-	-	OBL
<i>Typha latifolia</i>	Broadleaf cattail	native	perennial herb (aquatic)	-	-	OBL
<i>Urtica dioica</i>	Stinging nettle	native	perennial herb	-	-	FAC
<i>Verbena lasiostachys</i>	Western vervain	native	perennial herb	-	-	FAC
<i>Vicia sativa</i>	Spring vetch	non-native	annual herb, vine	-	-	FACU
<i>Vitis californica</i>	California wild grape	native	vine, shrub	-	-	FACU
<i>Washingtonia robusta</i>	Washington fan palm	non-native (invasive)	tree	-	Moderate	FACW
<i>Xanthium spinosum</i>	Spiny cocklebur	native	annual herb	-	-	FACU
<i>Xanthium strumarium</i>	Cocklebur	native	annual herb	-	-	FAC
<i>Zeltnera muehlenbergii</i>	Muehlenberg's centaury	native	annual herb	-	-	FAC

Scientific Name	Common Name
Mammals	
<i>Castor canadensis</i>	North American beaver
<i>Lepus californicus</i>	blacktailed jackrabbit
<i>Lontra canadensis</i>	river otter
<i>Mephitis mephitis</i>	striped skunk
<i>Ondatra zibethicus</i>	muskrat
<i>Zalophus californianus</i>	California sea lion
Birds	
<i>Agelaius phoeniceus</i>	red-winged blackbird
<i>Anas acuta</i>	northern pintail
<i>Anas americana</i>	American wigeon
<i>Anas carolinensis</i>	green-winged teal

Scientific Name	Common Name
<i>Anas clypeata</i>	northern shovler
<i>Anas platyrhynchos</i>	mallard
<i>Anas strepera</i>	gadwall
<i>Aphelocoma californica</i>	California scrub jay
<i>Ardea alba</i>	great egret
<i>Ardea herodias</i>	great blue heron
<i>Aythya valisineria</i>	canvasback
<i>Botaurus lentiginosus</i>	American bittern
<i>Branta canadensis</i>	Canada goose
<i>Bucephala albeola</i>	bufflehead
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Buteo swainsoni</i>	Swainson's hawk
<i>Cathartes aura</i>	turkey vulture
<i>Charadrius vociferus</i>	killdeer
<i>Chen caerulescens</i>	snow goose
<i>Circus cyaneus</i>	northern harrier
<i>Cistothorus palustris</i>	marsh wren
<i>Colaptes auratus</i>	northern flicker
<i>Columba livia</i>	rock pigeon
<i>Corvus brachyrhynchos</i>	American crow
<i>Egretta thula</i>	snowy egret
<i>Euphagus cyanocephalus</i>	Brewer's blackbird
<i>Falco sparverius</i>	American kestrel
<i>Fulica americana</i>	American coot
<i>Haemorhous mexicanus</i>	house finch
<i>Hirundo rustica</i>	barn swallow
<i>Lanius ludovicianus</i>	loggerhead shrike
<i>Larus occidentalis</i>	western gull
<i>Larus sp.</i>	gull sp.
<i>Megaceryle alcyon</i>	belted kingfisher
<i>Melanerpes formicivorus</i>	acorn woodpecker
<i>Melospiza melodia</i>	song sparrow
<i>Mimus polyglottos</i>	northern mockingbird

Scientific Name	Common Name
<i>Molothrus ater</i>	brown headed cowbird
<i>Nycticorax nycticorax</i>	black-crowned night heron
<i>Pandion haliaetus</i>	osprey
<i>Pavo spp.</i>	peafowl
<i>Pelecanus erythrorhynchos</i>	American white pelican
<i>Phalacrocorax auritus</i>	double-crested cormorant
<i>Phasianus colchicus</i>	ring-necked pheasant
<i>Pica nuttalli</i>	yellow-billed magpie
<i>Plegadis chihi</i>	white-faced ibis
<i>Podiceps nigricollis</i>	eared grebe
<i>Podilymbus podiceps</i>	pieb-billed grebe
<i>Quiscalus mexicanus</i>	great-tailed grackle
<i>Sayornis nigricans</i>	black phoebe
<i>Sayornis saya</i>	Say's phoebe
<i>Setophaga coronata</i>	yellow-rumped warbler
<i>Sturnella neglecta</i>	western meadowlark
<i>Sturnus vulgaris</i>	European starling
<i>Tringa melanoleuca</i>	greater yellowlegs
<i>Tringa spp.</i>	yellowlegs spp.
<i>Turdus migratorius</i>	American robin
<i>Tyrannus verticalis</i>	western kingbird
<i>Zenaida macroura</i>	mourning dove
<i>Zonotrichia leucophrys</i>	white-crowned sparrow
Reptiles and Amphibians	
<i>Lithobates catesbeianus</i>	American bullfrog
<i>Actinemys marmorata</i>	Western pond turtle
<i>Sceloporus occidentalis</i>	western fence lizard
<i>Thamnophis sirtalis infernalis</i>	California red-sided garter snake
<i>Thamnophis gigas</i>	giant garter snake
Fish	
<i>Ameiurus nebulosus</i>	brown bullhead
<i>Carassius auratus</i>	goldfish
<i>Catostomus occidentalis</i>	Sacramento sucker

Scientific Name	Common Name
<i>Cottus asper</i>	prickly sculpin
<i>Dorosoma petenense</i>	threadfin shad
<i>Gambusia affinis</i>	western mosquitofish
<i>Hypomesus nipponensis</i>	wakasagi
<i>Hysterocarpus traskii</i>	tule perch
<i>Lepomis gibbosus</i>	pumpkinseed
<i>Lepomis gulosus</i>	warmouth
<i>Lepomis macrochirus</i>	bluegill
<i>Menidia beryllina</i> ssp.	Mississippi silverside
<i>Micropterus dolomieu</i>	smallmouth bass
<i>Micropterus punctulatus</i>	spotted bass
<i>Micropterus salmoides</i>	largemouth bass
<i>Notemigonus crysoleucas</i>	golden shiner
<i>Percina macrolepida</i>	bigscale logperch
<i>Pogonichthys macrolepidotus</i>	Sacramento splittail
<i>Pomoxis annularis</i>	white crappie
<i>Pomoxis nigromaculatus</i>	black crappie
Invertebrates	
<i>Procambarus clarkii</i>	red swamp crayfish
<i>Neotrypaea californiensis</i>	ghost shrimp

All species identified using the Jepson Manual, 2nd Edition (Baldwin et al. 2012) and Jepson eFlora (2018); nomenclature follows Jepson eFlora. Sp.: "species", intended to indicate that the observer was confident in the identity of the genus but uncertain which species.

*Rarity Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2018a)

- FE: Federal Endangered
- FT: Federal Threatened
- SE: State Endangered
- ST: State Threatened
- SR: State Rare
- Rank 1A: Plants presumed extinct in California
- Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
- Rank 2: 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

* Invasive Status: California Invasive Plant Inventory (Cal-IPC 2018)

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

**Arid West Wetland Indicator Status (Corps 2008).

APPENDIX C

POTENTIAL FOR SPECIAL-STATUS PLANT AND WILDLIFE SPECIES TO OCCUR IN THE STUDY AREA

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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) Information for Conservation and Planning Database (USFWS 2018a), the California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CDFW 2018a), and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2018) for the Dixon, Saxon, Clarksburg, Dozier, Liberty Island, Courtland, Bird's Landing, Rio Vista and Isleton USGS 7.5-minute quadrangles.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Plants			
Ferris' milk-vetch <i>Astragalus tener</i> var. <i>ferrisiae</i>	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 meadows and seeps nor subalkaline flats within valley and foothill grasslands. However, there are known occurrences within the vicinity. Nevertheless, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
alkali milk-vetch <i>Astragalus tener</i> var. <i>tener</i>	Rank 1B.2	Playas, valley and foothill grassland (adobe clay), vernal pools. Elevation ranges from 0 to 195 feet (1 to 60 meters). Blooms Mar-Jun.	Unlikely. The Study Area does not contain playas or vernal pools. However, the Study Area does contain valley and foothill grassland on clay soils and there are several known occurrences within 5 miles. Nevertheless, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
heartscale <i>Atriplex cordulata</i> var. <i>cordulata</i>	Rank 1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland (sandy). Elevation ranges from 0 to 1835 feet (0 to 560 meters). Blooms Apr-Oct.	Unlikely. The Study Area does not contain valley foothill grassland on sandy or saline soil. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
brittlescale <i>Atriplex depressa</i>	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools. Elevation ranges from 0 to 1050 feet (1 to 320 meters). Blooms Apr-Oct.	Unlikely. The Study Area does not contain alkali scalds or alkaline clay in annual grassland. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
vernal pool smallscale <i>Atriplex persistens</i>	Rank 1B.2	Vernal pools (alkaline). Elevation ranges from 30 to 375 feet (10 to 115 meters). Blooms Jun, Aug, Sep, Oct.	Unlikely. The Study Area does not contain vernal pools. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Plants			
watershield <i>Brasenia schreberi</i>	Rank 2B.3	Marshes and swamps (freshwater). Elevation ranges from 95 to 7220 feet (30 to 2200 meters). Blooms Jun-Sep.	Unlikely. The Study Area contains open freshwater; however known elevation ranges of the species is above that of the Study Area. Additionally no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
bristly sedge <i>Carex comosa</i>	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.	Moderate Potential. The Study Area contains banks along open water with known associated species. However, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
pappose tarplant <i>Centromadia parryi</i> ssp. <i>parryi</i>	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.	Unlikely. The Study Area contains vernally mesic, alkaline valley and foothill grassland within the elevation range of the species. However, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Parry's rough tarplant <i>Centromadia parryi</i> ssp. <i>rudis</i>	Rank 4.2	Valley and foothill grassland, vernal pools. Elevation ranges from 0 to 330 feet (0 to 100 meters). Blooms May-Oct.	Present. Parry's rough tarplant was observed in the Study Area during rare plant surveys conducted by WRA Inc.
Bolander's water-hemlock <i>Cicuta maculata</i> var. <i>bolanderi</i>	Rank 2B.1	Marshes and swamps coastal, fresh or brackish water. Elevation ranges from 0 to 655 feet (0 to 200 meters). Blooms Jul-Sep.	Unlikely. The Study Area contains fresh and brackish marshes within the elevation range of the species. However, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
dwarf downingia <i>Downingia pusilla</i>	Rank 2B.2	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 0 to 1460 feet (1 to 445 meters). Blooms Mar-May.	Unlikely. The Study Area does not contain vernal pools. However, mesic valley and foothill grasslands are present. Known occurrences are within 5 miles of the Study Area. Nevertheless, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Jepson's coyote thistle <i>Eryngium jepsonii</i>	Rank 1B.2	Valley and foothill grassland, vernal pools. Elevation ranges from 5 to 985 feet (3 to 300 meters). Blooms Apr-Aug.	No Potential. No individuals were observed during protocol level rare plant surveys that occurred during the blooming period.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Plants			
San Joaquin spearscale <i>Extriplex joaquinana</i>	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Elevation ranges from 0 to 2740 feet (1 to 835 meters). Blooms Apr-Oct.	Unlikely. The Study Area does not contain chenopod scrub, meadows, seeps or playas. Alkaline valley and foothill grassland are present. Nevertheless, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
fragrant fritillary <i>Fritillaria liliacea</i>	Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 5 to 1345 feet (3 to 410 meters). Blooms Feb-Apr.	No Potential. The Study Area does not contain woodland, prairie, scrub or valley grassland on serpentine soil. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
adobe-lily <i>Fritillaria pluriflora</i>	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 195 to 2315 feet (60 to 705 meters). Blooms Feb-Apr.	No Potential. The Study Area does not contain chaparral or woodland. The Study Area is well below the known elevation range of the species. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Boggs Lake hedge-hyssop <i>Gratiola heterosepala</i>	SE, Rank 1B.2	Marshes and swamps (lake margins), vernal pools. Elevation ranges from 30 to 7790 feet (10 to 2375 meters). Blooms Apr-Aug.	Unlikely. The Study Area does not contain lake margins or vernal pools. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
hogwallow starfish <i>Hesperex caulescens</i>	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.	Unlikely. While the Study Area contains mesic valley and foothill grassland on clay soils, this species is only sometimes on alkaline soils. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
woolly rose-mallow <i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	Rank 1B.2	Marshes and swamps (freshwater). Elevation ranges from 0 to 395 feet (0 to 120 meters). Blooms Jun-Sep.	Present. Woolly rose-mallow was observed in the Study Area during rare plant surveys conducted by WRA Inc.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Plants			
Carquinez goldenbush <i>Isocoma arguta</i>	Rank 1B.1	Valley and foothill grassland (alkaline). Elevation ranges from 0 to 65 feet (1 to 20 meters). Blooms Aug-Dec.	Unlikely. While the Study Area contains alkaline soil in grassland, swale habitat is limited and no benching was observed within it. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Northern California black walnut <i>Juglans hindsii</i>	Rank 1B.1	Riparian forest, riparian woodland. Elevation ranges from 0 to 1445 feet (0 to 440 meters). Blooms Apr-May.	No Potential. The Study Area does not contain creeks or streams associated with deep alluvial soil. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Delta tule pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Rank 1B.2	Marshes and swamps (freshwater and brackish). Elevation ranges from 0 to 15 feet (0 to 5 meters). Blooms May-Jul (Aug-Sep).	Unlikely. The Study Area contains brackish marsh within the elevation range of the species. Additionally, known associated species are present as well as several occurrences immediately adjacent or within the Study Area. However, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
legenere <i>Legenere limosa</i>	Rank 1B.1	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 pools. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Heckard's pepper-grass <i>Lepidium latipes</i> var. <i>heckardii</i>	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 in grassland nor vernal pools. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Mason's lilaeopsis <i>Lilaeopsis masonii</i>	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.	Present. Mason's lilaeopsis was observed in the Study Area during rare plant surveys conducted by WRA Inc.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Plants			
Delta mudwort <i>Limosella australis</i>	Rank 2B.1	Marshes and swamps (freshwater or brackish), riparian scrub. Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms May-Aug.	Unlikely. The Study Area contains brackish marsh within the elevation range of the species. Additionally, known associated species are present. However, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
little mouseltail <i>Myosurus minimus</i> ssp. <i>apus</i>	Rank 3.1	Valley and foothill grassland, vernal pools (alkaline). Elevation ranges from 65 to 2100 feet (20 to 640 meters). Blooms Mar-Jun.	Unlikely. While the Study Area contains grasslands with alkaline soils, this species is known in bare soil within the grasslands. This niche was not observed within the Study Area. The Study Area does not contain vernal pools. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Baker's navarretia <i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Rank 1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools. Elevation ranges from 15 to 5710 feet (5 to 1740 meters). Blooms Apr-Jul.	Unlikely. While the Study Area contains grasslands with alkaline soils, this species is more associated with swales or vernal pools with bare soil. This niche was not observed within the Study Area. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Colusa grass <i>Neostapfia colusana</i>	FT, SE, Rank 1B.1	Vernal pools (adobe, large). Elevation ranges from 15 to 655 feet (5 to 200 meters). Blooms May-Aug.	No Potential. The Study Area does not contain vernal pools. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
bearded popcornflower <i>Plagiobothrys hystriculus</i>	Rank 1B.1	Valley and foothill grassland (mesic), vernal pools margins. Elevation ranges from 0 to 900 feet (0 to 274 meters). Blooms Apr-May.	Unlikely. While the Study Area contains mesic grasslands, this species is more often located within vernal pools swales or margins, which are not present. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Plants			
California alkali grass <i>Puccinellia simplex</i>	Rank 1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland, vernal pools. Elevation ranges from 5 to 3050 feet (2 to 930 meters). Blooms Mar-May.	Unlikely. While the Study Area contains grasslands, which are alkaline, and vernally mesic this species is often located in bare soil and associated with halophytic species for occurrences within the Delta region. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Sanford's arrowhead <i>Sagittaria sanfordii</i>	Rank 1B.2	Marshes and swamps (assorted shallow freshwater). Elevation ranges from 0 to 2135 feet (0 to 650 meters). Blooms May-Oct (Nov).	Unlikely. The Study Area contains slow-moving or standing freshwater ditches. However, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
side-flowering skullcap <i>Scutellaria lateriflora</i>	Rank 2B.2	Meadows and seeps (mesic), marshes and swamps. Elevation ranges from 0 to 1640 feet (0 to 500 meters). Blooms Jul-Sep.	Unlikely. While the Study Area contains marshes, the niche of the species is more freshwater than that found within the Study Area. Additionally, the species is often found on logs in the Delta region where water is likely less brackish than what occurs adjacent to the Study Area. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Keck's checkerbloom <i>Sidalcea keckii</i>	FE, Rank 1B.1	Cismontane woodland, valley and foothill grassland. Elevation ranges from 245 to 2135 feet (75 to 650 meters). Blooms Apr-May (Jun).	No Potential. The Study Area does not contain woodland or grassland on serpentine-derived clay soils. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.
Suisun Marsh aster <i>Symphyotrichum lentum</i>	Rank 1B.2	Marshes and swamps (brackish and freshwater). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms (Apr)May-Nov.	Present. Suisun Marsh aster was observed in the Study Area during rare plant surveys conducted by WRA Inc.
saline clover <i>Trifolium hydrophilum</i>	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.	Unlikely. The Study Area contains freshwater marshes and mesic, alkaline grasslands within the elevation range of the species. However, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Plants			
Crampton's tuctoria or Solano grass <i>Tuctoria mucronata</i>	FE, SE, Rank 1B.1	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 15 to 35 feet (5 to 10 meters). Blooms Apr-Aug.	No Potential. While the Study Area contains mesic grasslands, the niche of the species is within clay bottoms of drying lakes within grasslands. This niche is not present within the Study Area. Additionally, no individuals were observed during protocol level rare plant surveys that occurred during the blooming period.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
Mammals			
American badger <i>Taxidea taxus</i>	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.	No Potential. The Study Area is a flood-irrigated farm, or duck hunting club, both practices would drown badgers and eliminates prey sources (e.g. ground squirrels). No sign of badgers have been observed during numerous field site visits by WRA.
California sea lion <i>Zalophus californianus</i>	MMPA (NMFS)	Range from central Mexico to British Columbia, Canada. Feeds on various fish and squid. Primary breeding range is from the Channel Islands in California to Southern Mexico.	Unlikely. While this species has been observed in sloughs surrounding the Study Area, no rookeries or haul outs are known in the vicinity, and the species is unlikely to utilize the habitat within the Study Area.
fringed myotis <i>Myotis thysanodes</i>	WBWG	Associated with a wide variety of habitats including dry woodlands, desert scrub, mesic coniferous forest, grassland, and sage-grass steppes. Buildings, mines and large trees and snags are important day and night roosts.	Unlikely. The Study Area does not contain the typical dry or xeric habitats used by this species. The cold, humid and windy nature of the Study Area makes thermoregulation by this species difficult and therefore unlikely to occur.
harbor seal <i>Phoca vitulina</i>	MMPA (NMFS)	Broadly distributed in coastal areas of the northern hemisphere. Most significant haul-out site in south San Francisco Bay is at Mowry Slough. Pups are born in March and April in Northern California.	Unlikely. This species is commonly known to travel through sections of the Sacramento and San Joaquin Rivers especially during salmon migrations. However, no suitable haul outs or rookery locations are present and the species is unlikely to utilize the habitat within the Study Area.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
hoary bat <i>Lasiurus cinereus</i>	WBWG	Prefers open habitats or habitat mosaics, with access to protected trees for cover and open areas or habitat edges for feeding. Roosts on the trunk of or within dense foliage of large trees. Feeds primarily on moths. Requires water in close proximity.	Unlikely. This species roosts entirely in trees. Tree roosting bats require very large diameter trees (diameter > 30 inches dbh) which are also protected from winds, can moderate humidity and provide stable thermoregulation (Silvis et al 2015). Any trees within the Study Area are typically unprotected and are exposed to cold, high velocity Delta winds making thermal stability unlikely to support tree roosting species.
long-eared myotis <i>Myotis evotis</i>	WBWG	Occurs in semiarid shrublands, sage, chaparral, and agricultural areas, but is usually associated with coniferous forests from seal level to 9000 feet. Individuals roost under exfoliating tree bark, and in hollow trees, caves, mines, cliff crevices, and rocky outcrops on the ground. They also sometimes roost in buildings and under bridges.	Unlikely. The Study Area does not contain the arid shrubland, or coniferous forest habitat typically associated with this species.
long-legged myotis <i>Myotis volans</i>	WBWG	Primarily found in dry coniferous forests, but also occurs seasonally in desert habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.	Unlikely. The Study Area does not contain the coniferous forest this species typically inhabits. No rock outcroppings or mines occur within the Study Area. The Study Area is not in a dry or arid habitat as is typically used by this species.
pallid bat <i>Antrozous pallidus</i>	SSC, WBWG	Occupies a variety of habitats at low elevation including grassland, shrubland, woodland, and forest. Most common in open, dry habitats and commonly roosts in fissures in cliffs, abandoned buildings, and under bridges	Moderate Potential. Several occurrences of this species have been recorded in the local area (CDFW 2018a). Farm buildings within the Study Area may provide suitable roosting habitat for this species, protecting it from thermal instability, and high winds. Close proximity to water and potential sources of forage are also nearby.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
salt-marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE, SE, CFP, SSC	Found only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat, but may use other thick wetland vegetation. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	No Potential. The Study Area does not contain any salt marsh habitat that is required by this species. Furthermore, the species is not known for this portion of the northern Delta.
silver-haired bat <i>Lasionycteris noctivagans</i>	WBWG Medium	Primarily a forest dweller, feeding over streams, ponds, and open brushy areas. Summer habitats include a variety of forest and woodland types, both coastal and montane. Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark.	Unlikely. The Study Area does not contain the woodland or forest habitat typically associated with this species.
Suisun shrew <i>Sorex ornatus sinuosus</i>	SSC	Tidal marshes of the northern shores of San Pablo and Suisun Bays. Require dense low-lying cover and driftweed and other litter above the mean high tide line for nesting and foraging.	No Potential. This subspecies only occurs along the north and western shores of San Pablo Bay and does not occur further north in Solano County. The Study Area is outside of this subspecies' known range (Bolster 1998, CDFW 2018a).
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	SSC, WBWG	Primarily found in rural settings in a wide variety of habitats including oak woodland and mixed coniferous-deciduous forest. Day roosts highly associated with caves and mines. Building roost sites must be cave like. Very sensitive to human disturbance.	Unlikely. This species typically requires undisturbed abandoned buildings, caves, or mines to support roosting. The few buildings on site are primarily open barns or occupied dwellings, which provide insufficient thermal regulatory properties for this species, or are too regularly disturbed to support roosting by this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
western red bat <i>Lasiurus blossevillii</i>	SSC, WBWG	This species is highly migratory and is typically solitary, roosting primarily in the foliage of trees or shrubs. It is associated with broad-leaved tree species including cottonwoods, sycamores, alders, and maples. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas.	Unlikely. This species roosts entirely in trees. Tree roosting bats require very large diameter trees (diameter > 30 inches dbh) which are also protected from winds, can moderate humidity and provide stable thermoregulation (Silvilis et al 2015). Any trees within the Study Area are typically unprotected and are exposed to cold, high velocity Delta winds making thermal stability unlikely to support tree roosting species.
Birds			
Allen's hummingbird <i>Selasphorus sasin</i>	BCC	Summer resident along the California coast, breeding in a variety of woodland and forest habitats, including parks and gardens with abundant nectar sources. Nest in shrubs and trees with dense vegetation.	Unlikely [to nest]. The Study Area does not contain typical coastal scrub, forest or woodland habitat used by this species for nesting. This species is not known to nest in this area of Solano County (Rippey et al 2014).
American peregrine falcon <i>Falco peregrinus anatum</i>	FD, SD, CFP, BCC	Year-round resident and winter visitor. Occurs in a wide variety of habitats, though often associated with coasts, bays, marshes and other bodies of water. Nests on protected cliffs and also on man-made structures including buildings and bridges. Preys on birds, especially waterbirds. Forages widely.	Unlikely [to nest]. The Study Area does not contain suitable tall cliffs or other such structures to support nesting by this species. The species may opportunistically forage or flyover the Study Area; however, suitable nesting habitat is lacking and the species is unlikely to breed in the Study Area.
American white pelican <i>Pelecanus erythrorhynchos</i>	SSC	Non-breeding visitor in most of California. Nests colonially on large interior lakes or rivers; breeding restricted to portions of eastern California. Winters on sheltered inland and estuarine waters with abundant small fishes for forage.	Unlikely [to nest]. While this species has been observed in the area, it is a winter visitor and does not breed in this section of California. Furthermore, the Study Area provides suboptimal foraging habitat, and while it may be observed flying over the Study Area, is more likely to utilize the adjacent tidal areas outside of the Study Area for foraging and loafing.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
bald eagle <i>Haliaeetus leucocephalus</i>	FD, SE, CFP, BCC, EPA	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 [to nest]. This species is not known to nest within this portion of Solano County (Rippey et al 2014). While the species may infrequently be observed flying over the Study Area, the Study Area provides suboptimal nesting and foraging habitat and is unlikely to support the species.
black oystercatcher <i>Haematopus bachmani</i>	BCC	Resident on rocky shores of marine habitats along almost the entire California coast and adjacent islands. Breeds on undisturbed, rocky, open shores and cliffs.	No Potential [to nest]. The Study Area does not contain rocky marine shorelines used by this species.
black-crowned night heron <i>Nycticorax nycticorax</i>	none (nesting sites protected by CDFW)	Primarily a year-round resident. Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots. Largely nocturnal, roosting during the day.	Moderate Potential [to nest]. A rookery of egrets and cormorants is located outside of the Study Area on a series of small islands within Hass Slough. This species has also been observed foraging and perching during surveys. A potential roosting or rookery was observed within the northern riparian portion of Lookout Slough.
Bryant's savannah sparrow <i>Passerculus sandwichensis alaudinus</i>	SSC	Year-round resident associated with the coastal fog belt, primarily between Humboldt and northern Monterey Counties. Occupies low tidally influenced habitats and adjacent areas; often found where wetland communities merge into grassland. May also occur in drier grasslands. Nests near the ground in taller vegetation, including along roads, levees, and canals.	Unlikely [to nest]. Short stature grasslands such as those found within the Study Area are typically nesting habitat for this species. However, the Study Area is outside of the known range of the coastal Bryant's savannah sparrow (Shuford and Gardali 2008).

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
burrowing owl <i>Athene cunicularia</i>	BCC, SSC	Year-round resident and winter visitor. Occurs in open, dry grasslands and scrub habitats with low-growing vegetation, perches and abundant mammal burrows. Preys upon insects and small vertebrates. Nests and roosts in old mammal burrows, most commonly those of ground squirrels.	Unlikely [to nest]. Burrowing owls require small mammal burrows in order to nest. The Study Area uses flood irrigation for both ranching and hunting areas. The use of flood irrigation drowns most small mammals and collapses their burrows. Small mammals are also considered a threat to levee integrity and are managed to prevent levee failures (Van Vuren et al. 2014). No ground squirrel colonies were observed within the Study Area and no former ground squirrel burrows were observed during the site visits making the Study Area unlikely to support nesting owls.
California black rail <i>Laterallus jamaicensis coturniculus</i>	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 [to nest]. As part of the surveys performed in 2018, surveys for this species in the marshes around Liberty Island were conducted. No rails of any species were detected during the surveys, which included passive listening, and active playback. Despite the presence of marshes around the southern edge of the Study Area, no detections were made and the species is unlikely to be present.
California least tern <i>Sternula (formerly Sterna) antillarum browni</i>	FE, SE, CFP	Summer resident, nesting colonially in coastal and estuarine areas from San Francisco Bay south. Breeding colonies in the San Francisco Bay Estuary found on protected estuarine shores and salt ponds. Prefers barren or sparsely vegetated, flat substrates near water. Forages for small surface fish along shores, coasts, etc.	Unlikely [to nest]. The Study Area does not contain any salt ponds, alkaline lakes, salt flats, gravel bars or other such features, which are required to support nesting by the species. The species may infrequently be observed flying over the Study Area, or potentially opportunistically foraging in the adjacent sloughs, but the Study Area provides no nesting and suboptimal foraging for the species. Therefore, it is unlikely to occur.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
Clark's grebe <i>Aechmophorus clarkii</i>	BCC	(Nesting) Primarily breeds in northeastern California near Lassen, Siskiyou, Lake and Butte Counties in close association with large lakes.	No Potential [to nest]. No suitable lakes or other such large waterbodies are present for this species to nest. The species may be seen in the vicinity during winter migrations and may also forage in waters of the Study Area. There is no potential for the species to utilize the Study Area for nesting.
double-crested cormorant <i>Phalacrocorax auritus</i> not SSC or BCC	DFG:WL	(Rookery site) colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	Unlikely [to nest]. A rookery of egrets and cormorants is located outside of the Study Area on a series of small islands within Hass Slough. No nesting activity or rookeries for cormorants have been found within the Study Area. Because optimal nesting habitat is found outside of the Study Area, and no nests have thus far been observed within the Study Area, it is unlikely the species would begin nesting within the Study Area, especially due to the ongoing disturbances associated with ranching and hunting.
golden eagle <i>Aquila chrysaetos</i>	BCC, CFP, EPA	Occurs year-round in rolling foothills, mountain areas, sage-juniper flats, and deserts. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees, usually within otherwise open areas.	Unlikely [to nest]. The Study Area does not contain cliffs or large snags typically used for nesting by this species. This species typically prefers to forage in hills or grasslands with large populations of prey items (e.g. ground squirrels). No large populations of prey are present due to the flood irrigation practices used throughout the Study Area. The absence of both nesting structures and prey sources make it highly unlikely to species would occur within the Study Area.
grasshopper sparrow <i>Ammodramus savannarum</i>	SSC	Summer resident in the region. Breeds in open grassland habitats, generally with low- to moderate-height grasses and scattered shrubs.	Moderate Potential [to nest]. Though subject to flooding by agriculture, short stature grasslands maintained by grazing and ranching are likely to provide suitable nesting habitat for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
great blue heron <i>Ardea herodias</i>	none (nesting sites protected by CDFW)	Primarily a year-round resident. Colonial nester in tall trees, cliffs, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	Unlikely [to nest]. A rookery of egrets and cormorants is located outside of the Study Area on a series of small islands within Hass Slough. No nesting activity or rookeries for this or other such species have been found within the Study Area. Because optimal nesting habitat is found outside of the Study Area, and no nests have thus far been observed within the Study Area, it is unlikely the species would begin nesting within the Study Area, especially due to the ongoing disturbances associated with ranching and hunting.
great egret <i>Ardea alba</i>	none (nesting sites protected by CDFW)	Primarily a year-round resident. Colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	Unlikely [to nest]. A rookery of egrets and cormorants is located outside of the Study Area on a series of small islands within Hass Slough. No nesting activity or rookeries for this or other egrets have been found within the Study Area. Because optimal nesting habitat is found outside of the Study Area, and no nests have thus far been observed within the Study Area, it is unlikely the species would begin nesting within the Study Area, especially due to the ongoing disturbances associated with ranching and hunting.
greater sandhill crane <i>Grus canadensis tabida</i>	ST, CFP	Utilizes wetlands, nesting in wet meadows, often in dense emergent vegetation to avoid nest predation. After fledging, cranes forage in irrigated grain fields near high quality roosting areas. Winter in the Central Valley.	Moderate Potential [to forage in winter]. Though the Study Area provides winter foraging when the species seasonally migrates to the region, this species has not been documented on site. Greater sandhill crane do not nest/breed in the Delta or the Central Valley. If present, the species would likely be found foraging in the agricultural fields.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
Lawrence's goldfinch <i>Spinus (= Carduelis) lawrencei</i>	BCC	Nests in open oak or other arid woodland and chaparral, near water. Nearby herbaceous habitats used for feeding. Closely associated with oaks.	Unlikely [to nest]. The Study Area does not contain oak woodland or chaparral habitat associated with this species, and this species is not known to nest in the Delta marshlands of Solano County (Rippey et al 2014).
least bell's vireo <i>Vireo bellii pusillus</i>	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.	Unlikely [to nest]. The Study Area is within the historic range of the species; however, there are no extant occurrences of breeding pairs within Solano or Yolo County. The closest documented extant occurrence is from 2009 in Stanislaus County, along the San Joaquin River, approximately 53 miles to the southeast (CNDDB 2019). Habitat within the Study Area is marginal and largely absent of dense multi-tiered riparian, and limited to the riparian habitat along Lookout Slough. Accounts of individuals, believed to be singing males, have been reported for Solano and Yolo County; however, no nesting or breeding has been documented (Howell et al. 2010, eBird 2019).
least bittern <i>Ixobrychus exilis</i>	SSC, BCC	Summer resident in portions of the Central Valley and southern California. Typically breeds in deeper freshwater marshes with dense emergent and woody vegetation.	Moderate Potential [to nest]. Marshes around the southern end of the Study Area (Liberty Farms) may provide suitable nesting and foraging habitat for this species.
lesser sandhill crane <i>Grus canadensis canadensis</i>	SSC	(Wintering) Breeds in southern Alaska and winters in the Central and Imperial Valleys of California. Winters in plains and valleys near fresh, shallow water; typically grain fields and irrigated pastures.	Moderate Potential [to forage in winter]. Though the Study Area provides winter foraging when the species seasonally migrates to the region, this species has not been documented on site. Lesser sandhill crane do not nest/breed in the Delta or the Central Valley. If present, the species would likely be found foraging in the agricultural fields.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
Lewis's woodpecker <i>Melanerpes lewis</i>	BCC	Uncommon resident in California occurring on open oak savannahs, broken deciduous and coniferous habitats. Breeds primarily in ponderosa pine forests, riparian woodlands and disturbed pine forests but is also known to nest in orchards and oak woodlands. Rare nester in the San Francisco Bay Area.	Unlikely [to nest]. The Study Area and surroundings do not contain the woodland or savannah habitats required to support this species. Additionally, this species is uncommon in the region and is only known as a migrant or winter visitor (Glover 2009).
long-billed curlew <i>Numenius americanus</i>	BCC	(Nesting) breeds in upland shortgrass prairies and wet meadows in northeastern California. Habitats on gravelly soils and gently rolling terrain are favored over others	No Potential [to nest]. This species does not nest in this portion of California (USFWS 2018a). The species can be found foraging in the area during winter migrations only, as there is no potential for the species to utilize the Study Area for nesting.
loggerhead shrike <i>Lanius ludovicianus</i>	BCC, 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.	Present. This species uses riparian woodlands like those along the periphery of the Study Area to nest. Short, unobstructed grasslands also provide suitable foraging habitat for the species. This species was observed during the January 2018 site assessment.
marbled godwit <i>Limosa fedoa</i>	BCC	(Nesting) Breed in shortgrass prairies near wetlands outside of California. On the wintering grounds, Marbled Godwits forage and rest along coastal mudflats, estuaries, and sandy beaches.	No Potential [to nest]. This species does not nest in this portion of California (USFWS 2018a). The species can be found foraging in the area during winter migrations only, as there is no potential for the species to utilize the Study Area for nesting.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
mountain plover <i>Charadrius montanus</i>	BCC, SSC	Winter visitor to the Central Valley and some interior portions of southern California. Wintering habitats consist of areas with very short vegetation and/or bare ground, and flat topography; agricultural fields are used most frequently. Does not breed in California.	No Potential [to nest]. This species does not nest in California. While the species may occasionally forage in the Study Area during winter migration events, there is no nesting potential.
northern harrier <i>Circus cyaneus</i>	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.	High Potential [to nest]. The species has been observed in the area during wildlife surveys. Open areas with shrubby vegetation and the close proximity to marsh and foraging habitat create potential nesting habitat for the species. While agricultural disturbance may degrade portions of the nesting habitat, the large scale of the site and open non-wooded sections of the Study Area result in a high potential for the species to nest in the Study Area.
Nuttall's woodpecker <i>Picoides nuttallii</i>	BCC	Resident in lowland woodlands throughout much of California west of the Sierra Nevada. Typical habitat is dominated by oaks.	Moderate Potential [to nest]. Large trees bearing woodpecker holes have been observed around the Study Area.
oak titmouse <i>Baeolophus inornatus</i>	BCC	Oak woodland and savannah, open broad-leaved evergreen forests containing oaks, and riparian woodlands. Associated with oak and pine-oak woodland and arborescent chaparral.	Unlikely [to nest]. This species is not known to nest within this portion of Solano County (Rippey et al 2014). Additionally, this species generally requires expanses of savannah or oak woodlands to support nesting, neither of which are present.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
Ridgway's (clapper) rail <i>Rallus obsoletus obsoletus</i>	FE, SE, CFP	Year-round resident in tidal marshes of the San Francisco Bay estuary. Requires tidal sloughs and intertidal mud flats for foraging, and dense marsh vegetation for nesting and cover. Typical habitat features abundant growth of cordgrass and pickleweed. Feeds primarily on mollusks and crustaceans.	No Potential [to nest]. The Study Area is outside of the known range for this species. Additionally, no salt marsh is present to support the species.
San Francisco common yellowthroat <i>Geothlypis trichas sinuosa</i>	BCC, SSC	Resident of the San Francisco Bay region, in fresh and saltwater marshes. Range extends northward to Tomales Bay, east to the Carquinez Straight and south to San Jose. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	No Potential [to nest]. The eastern extent of this subspecies' range is at the Carquinez Straight. The Study Area is approximately 30 miles east of the Carquinez Straight, and therefore outside of the species known range.
short-billed dowitcher <i>Limnodromus griseus</i>	BCC	Breeds in muskegs of taiga to timberline, and barely onto subarctic tundra. Winters on coastal mud flats and brackish lagoons. Prefers saltwater tidal flats, beaches, salt marshes but may also be found in freshwater mud flats and flooded agricultural fields during migration.	No Potential [to nest]. This species does not nest in this portion of California (USFWS 2018a). The species can be found foraging in the area during winter migrations only. Because the species does not nest in the area, there is no potential to impact nesting by this species from the Project.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Wildlife			
short-eared owl <i>Asio flammeus</i>	SSC	Primarily a winter visitor in the region, with very restricted local breeding. Occurs in open, treeless areas (e.g. marshes, grasslands) with elevated sites for foraging perches and dense vegetation for roosting and nesting. Preys on small mammals, most particularly voles.	Unlikely [to nest]. The Study Area does not contain suitable expanses of marsh to support foraging or nesting. Within the Study Area grazing operations keep grasslands throughout the area short which is preferable, but the Study Area also experiences a high level of disturbance due to ranching and hunting practices. This species is not known to nest in this area of Solano County (Rippey et al 2014)
snowy egret <i>Egretta thula</i>	none (nesting sites protected by CDFW)	Primarily a year-round resident. Colonial nester, with nest sites situated in trees or protected beds of emergent vegetation. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	Unlikely [to nest]. A rookery of egrets and cormorants is located outside of the Study Area on a series of small islands within Hass Slough. No nesting activity or rookeries for this or other such species have been found within the Study Area. Because optimal nesting habitat is found outside of the Study Area, and no nests have thus far been observed within the Study Area, it is unlikely the species would begin nesting within the Study Area, especially due to the ongoing disturbances associated with ranching and hunting.
song sparrow – “Modesto Population” <i>Melospiza melodia</i>	SSC, BCC	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.	Present. This species has been documented within 5-miles of the Study Area (CDFW 2018a) and song sparrows observed on site fall within the range of the Modesto Population. When present, the species would most likely be found within the marsh and riparian habitats within the Study Area.