Appendix D
Biological Site Assessment

TECHNICAL MEMORANDUM

Biological Site Assessment for Groundwater Production Wells for Pelger Mutual Water Company and Monitoring Well Options 1, 2, and 3 for Sutter Mutual Water Company

PREPARED FOR: Pelger Mutual Water Company
Sutter Mutual Water Company

PREPARED BY: Victor Leighton/CH2M HILL

DATE: July 29, 2011

Introduction

This technical memorandum identifies potential biological considerations associated with the proposed construction of a groundwater production well for Pelger Mutual Water Company (PMWC) and a groundwater monitoring well for Sutter Mutual Water Company (SMWC) as part of the Integrated Regional Water Management Program Proposition 50 Groundwater Well Production Element Project (proposed project). This information is based on a preliminary site assessment conducted on April 18, 2011, and review of aerial photographs; California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) search results; CNDDB, California Native Plant Society (CNPS), and U.S. Fish and Wildlife (USFWS) species lists; and historical documents for the area.

Information from these sources would be used in the planning and design phase of the proposed project. The site assessment was conducted to determine the occurrence of native habitats, including vernal pools, wetlands, and riparian habitat, and special-status species at the proposed groundwater production and monitoring well sites.

Proposed Action

PMWC proposes to install one groundwater production well near an existing irrigation canal. Figure 1 shows the general location of the proposed well, and Figure 1a shows the biological survey area for the well.

SMWC proposes to install one groundwater monitoring well. Figure 2 shows the three location options of the proposed well. Figures 2a, 2b, and 2c show site features associated with Well Options 1, 2, and 3, respectively.

Pelger Mutual Water Company

The groundwater production well would be within a 0.5-acre area in Sutter County, California (Township 13 North, Range 1 East, Section 24; 121˚ 48′ 36.00″ West longitude, 38˚ 57′ 53.00″ North latitude in the U.S. Geological Survey [USGS] Kirkville 7.5-minute quadrangle), approximately 9 miles northwest of Robbins, west of Cranmore Road, adjacent to a concrete-lined irrigation canal.

The proposed groundwater production well would require an 80-foot by 300-foot construction staging area. The final footprint of the well would not exceed 25 feet by 25 feet, with an estimated maximum well depth of 600 feet. Discharge piping would be required for the well. A maximum of 40 feet of discharge piping, 12 to 14 inches in diameter, would be installed at the well. The piping would discharge directly into a concrete-lined canal via open-ended, aboveground discharge, with a 45- to 60-degree elbow at the end.

The well pump would be powered by electricity and may require a maximum 300-foot-long overhead service line and one new power pole, approximately 12 inches in diameter, installed within 50 feet of the new well. Existing power poles from which electricity would take off are identified on Figure 1. Access to the well would be via existing roads, none of which would require improvements. There would also be a service pole, 12 inches in diameter, with a 3-phase, 440-volt, electrical controls panel box within 10 feet of the pump.

Sutter Mutual Water Company

One groundwater monitoring well would be installed to monitor groundwater levels and water quality. The three location options are summarized below.

Option 1

This location is in a 0.6-acre disturbance area in Sutter County (Township 14 North, Range 2 East, Section 33; 121˚ 44′ 35.89″ West longitude, 39˚ 01′ 14.44″ North latitude in the USGS Gilsizer Slough 7.5-minute quadrangle), approximately 10 miles north of Robbins.

Option 2

This location is in a 0.4-acre disturbance area in Sutter County (Township 14 North, Range 2 East, Section 32; 121˚ 46′ 53.93″ West longitude, 39˚ 01′ 28.93″ North latitude in the USGS Tisdale Weir 7.5-minute quadrangle), approximately 11 miles north of Robbins.

Option 3

This location is in a 0.5-acre disturbance area in Sutter County (Township 13 North, Range 2 East, Section 16; 121˚ 44′ 35.89″ West longitude, 39˚ 01′ 14.44″ North latitude in the USGS Kirkville 7.5-minute quadrangle), approximately 8 miles north of Robbins.

Survey Methods

The site surveys were conducted on April 18, 2011, by CH2M HILL biologist Victor Leighton between 9:30 a.m. and 3:00 p.m., with an escort from SMWC for the monitoring well locations. Air temperatures were between 55 and 65 degrees Fahrenheit, with scattered clouds to overcast, occasional light rain, and negligible wind speeds. The site was

LEGEND

- PRODUCTION WELL
- EXISTING POWER POLE
- PROPOSED POWER POLE
- ACCESS ROUTE
- PROPOSED ACCESS ROAD
- PROPOSED CONVEYANCE LINE
- PROPOSED POWER LINE
- PROJECT AREA
- ACCESS ROUTE

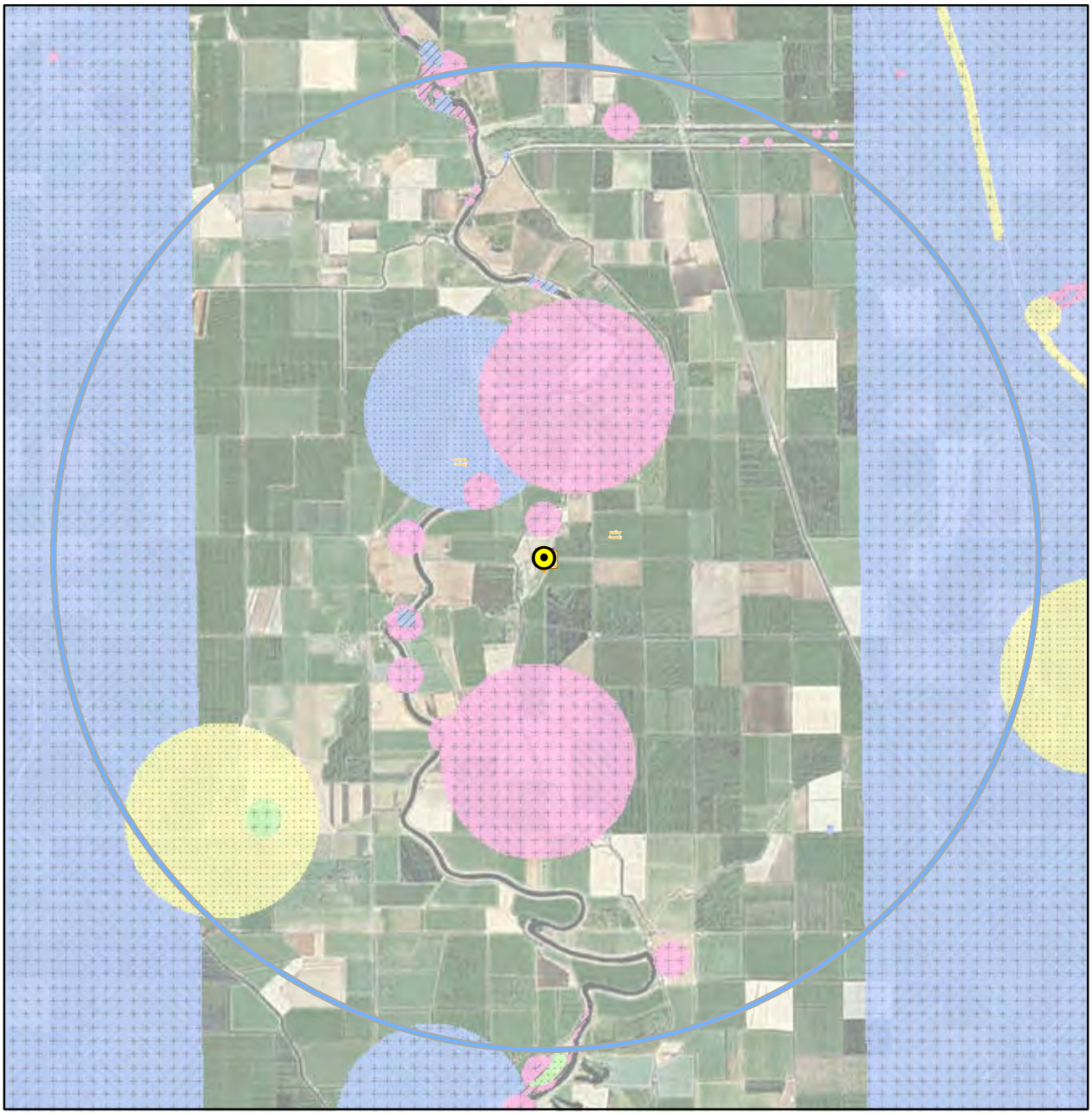
N

0 150
Feet

VICINITY MAP

FIGURE 1
PELGER MUTUAL WATER COMPANY PRODUCTION WELL LOCATION

PROPOSITION 50 GROUNDWATER WELL PRODUCTION ELEMENT



LEGEND

- PRODUCTION WELL
- EXISTING POWER POLE
- PROPOSED POWER POLE
- ACCESS ROUTE
- PROPOSED ACCESS ROAD
- PROPOSED CONVEYANCE LINE
- PROPOSED POWER LINE
- PROJECT AREA
- 5-MILE BUFFER

CALIFORNIA NATURAL DIVERSITY DATABASE

- Coastal and Valley Freshwater Marsh
- Great Valley Mixed Riparian Forest
- Swainson's hawk
- Wright's trichocoronis
- bank swallow
- giant garter snake
- great blue heron
- great egret
- mountain plover
- tricolored blackbird
- veiny monardella
- woolly rose-mallow

N

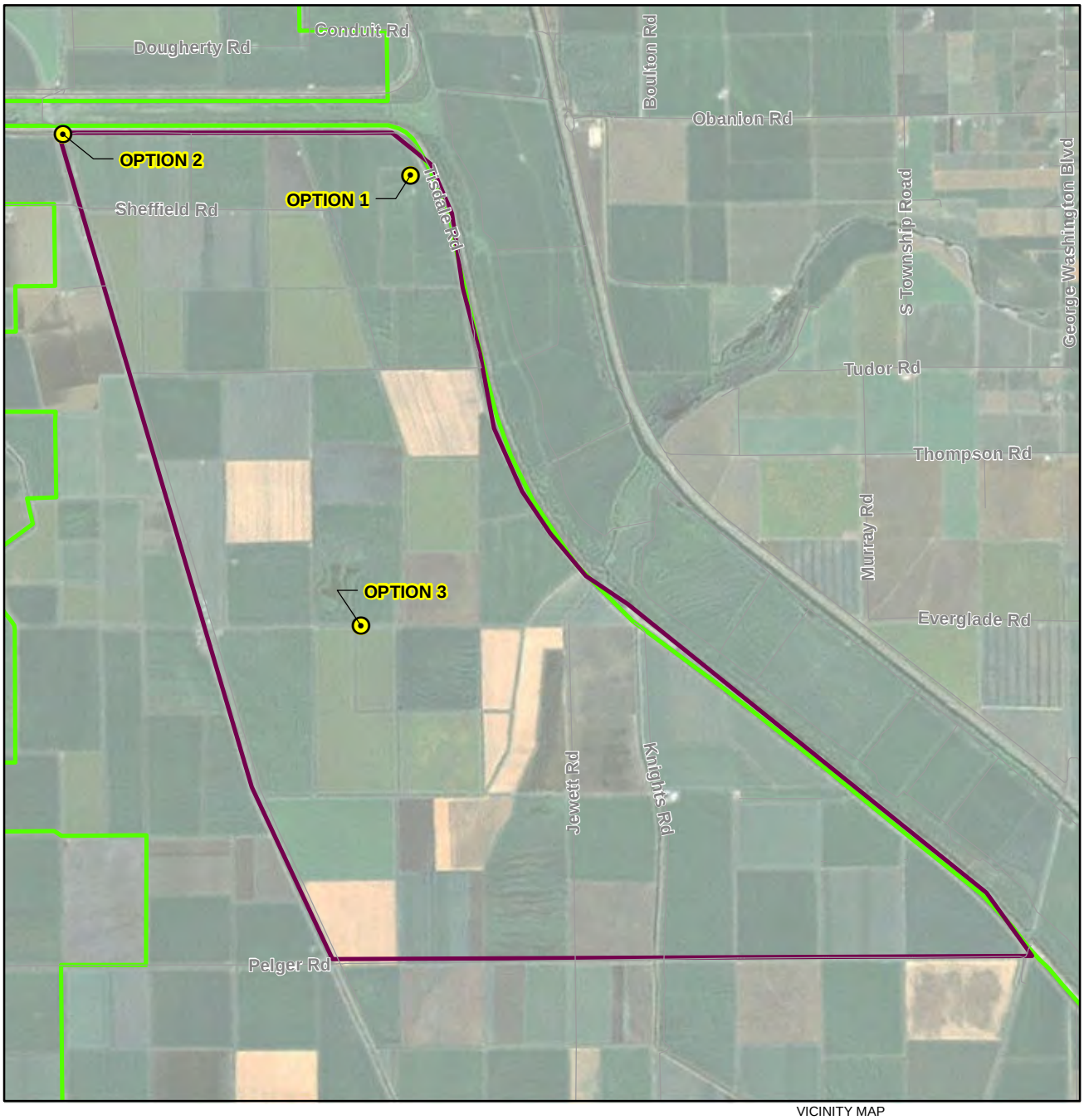
0 8,500
Feet

FIGURE 1a
PELGER MUTUAL WATER COMPANY BIOLOGICAL SURVEY

PROPOSITION 50 GROUNDWATER WELL PRODUCTION ELEMENT

CH2MHILL

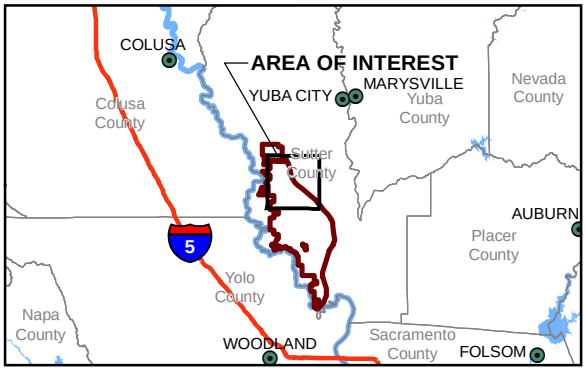
RDD \\ODIN\PROJ\NORTHERNCALIFORNIAWA\SACVALLEYPROP50\FIGURES\MXDS\PMWC\FIG1A_PMWC_WELL_BIOLOGY.MXD ECLARK1 5/23/2011 3:11:04 PM



LEGEND

- MONITORING WELL
- AREA OF INTEREST
- S.M.W.C. WATER DISTRICT BOUNDARY

VICINITY MAP



N

0 5,000
Feet

FIGURE 2
SUTTER MUTUAL WATER COMPANY PROPOSED MONITORING WELL OPTION LOCATIONS

PROPOSITION 50 GROUNDWATER WELL PRODUCTION ELEMENT

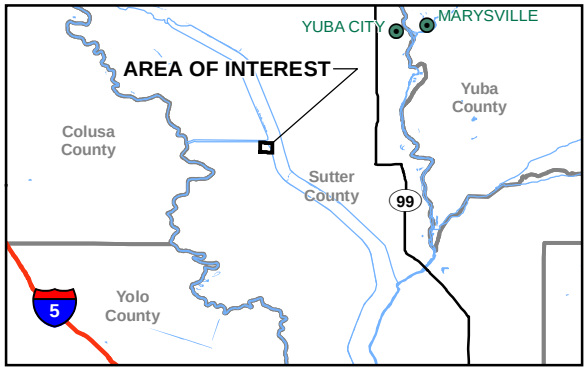
RDD \\ODIN\PROJ\NORTHERNCALIFORNIAWA\SACVALLEYPROP50\FIGURES\MXDS\SUTTER\FIG2_SUTTER_LOC.MXD ECLARK1 5/23/2011 3:13:29 PM

CH2MHILL

LEGEND

- MONITORING WELL
- EXISTING ACCESS ROUTE
- PROJECT AREA

VICINITY MAP



N

0 500

Feet

FIGURE 2a
SUTTER MUTUAL WATER COMPANY MONITORING WELL LOCATION OPTION 1

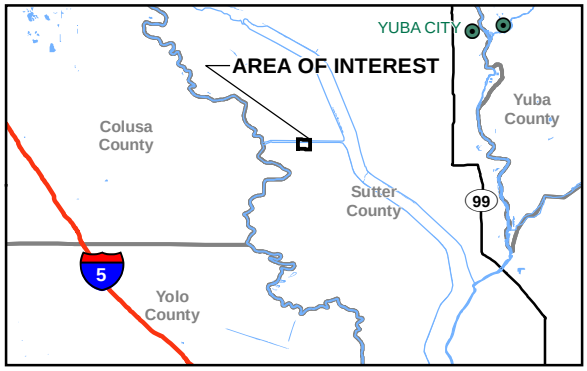
PROPOSITION 50 GROUNDWATER WELL PRODUCTION ELEMENT

CH2MHILL

LEGEND

- MONITORING WELL
- EXISTING ACCESS ROUTE
- PROJECT AREA

VICINITY MAP



N

0 500
Feet

FIGURE 2b
SUTTER MUTUAL WATER COMPANY MONITORING WELL LOCATION OPTION 2

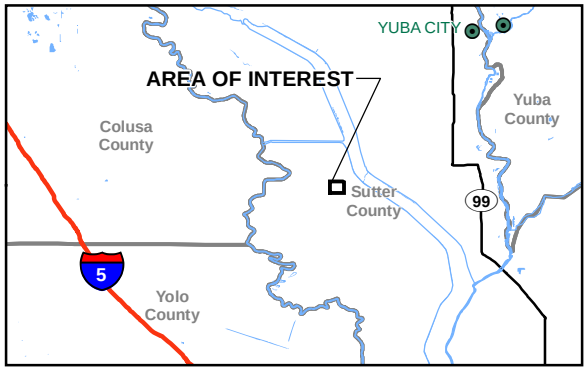
PROPOSITION 50 GROUNDWATER WELL PRODUCTION ELEMENT

CH2MHILL

LEGEND

- MONITORING WELL
- EXISTING ACCESS ROUTE
- PROJECT AREA

VICINITY MAP



N

0 500
Feet

FIGURE 2c
SUTTER MUTUAL WATER COMPANY MONITORING WELL LOCATION OPTION 3

PROPOSITION 50 GROUNDWATER WELL PRODUCTION ELEMENT

CH2MHILL

systematically evaluated on foot and by windshield survey throughout the project areas with binoculars to identify biological resources and environmental constraints. Photographs taken during the site surveys are provided in Attachment 1. The CNDDB search results (see Figures 1a, 2d, 2e, and 2f) and the CNDDB, USFWS, and CNPS species lists are provided in Attachment 2.

Survey Results

Flora

PMWC Production Well

This well location is in a highly compacted and disturbed area between a dirt access road and a deeply cut drainage/irrigation canal to the north and a constructed wetland sanctuary to the south. A winter wheat field is directly north of the drainage/irrigation canal. The predominant vegetation on the well pad site includes non-sensitive ruderal species such as globe mallow (*Malvaceae* sp.), ripgut brome *(Bromus diandrus)*, soft chess brome (*Bromus hordeaceus*), redstem fillaree *(Erodium cicutarium)*, and perennial pepperweed *(Lepidium latifolium)* in low coverage quantities. Vegetation along the canal consists of ruderal and wetland plant species such as perennial pepperweed, ripgut brome, blue vervain *(Verbena hastata)*, cattail (*Typha latifolia*), mugwort *(Artemisia vulgaris)*, bulrush *(Schoenoplectus acutus* var. *acutus)*, curly dock *(Rumex crispus)*, and black mustard *(Brassica nigra)*. The wetland habitat to the south is predominated by obligate wetland species such as bulrush and cattail. Southwest of the site is a narrow band of riparian trees, mainly Valley oaks (*Quercus lobata*). Attachment 3 (Table 3-1) lists the plant species observed within the project area.

SMWC Monitoring Well Option 1

The two proposed sites for this well are close to each other, and the following information is pertinent to both sites. The area is highly disturbed rice production fields, access roads, and irrigation canals, including the SMWC main canal. The area is routinely maintained through spraying, mowing, and disking. The predominant vegetation type observed within the project area includes disked rice fields and low-growing ruderal species such as globe mallow, soft chess brome, and ripgut brome. East of the well site is a well-developed riparian forest along the Sutter Bypass. Riparian species consist of Fremont cottonwood *(Populus fremontii)* and Gooding's willow *(Salix gooddingii)*. Attachment 3 (Table 3-1) lists the plant species observed within the project area.

SMWC Monitoring Well Option 2

This well site is a highly disturbed wide area along the main dirt access road (Tisdale Road). The SMWC main canal borders the north edge of the access road. North of the canal is the Sutter Bypass, which has a well-developed narrow band of riparian species consisting of Fremont cottonwood and Gooding's willow. Corn fields are to the south of the access road. West of the well site, two narrow bands of large eucalyptus trees follow the margin of an overflow canal in a southerly direction. The well site is devoid of vegetation. The area is routinely maintained through herbicide application and grading. Attachment 3 (Table 3-1) lists the plant species observed within the project area.

SMWC Monitoring Well Option 3

This well site is within a wide spot along Everglade Road. The area is highly disturbed rice production fields, row crops, dirt access roads, and irrigation canals, and vegetation is minimal with sparse ruderal species. The area is routinely maintained through herbicide applications and grading/farming practices.

Fauna

PMWC Production Well

Fauna species observed at the well site and adjacent habitats include the following species: American bittern *(Botarus lentiginosus)*, Greater white front goose *(Anser albifrons)*, mallard duck *(Anas platyrhynchos),* northern harrier *(Circus cyaneus),* ring-necked pheasant *(Phasianus colchicus)*, western scrub jay (*Aphelocoma californica)*, marsh wren *(Cistothorus palustris)*, red-winged blackbird *(Agelaius phoeniceus)*, western kingbird *(Tyrannus verticalis)*, California ground squirrel *(Otospermophilus beecheyi)*, and pocket gopher *(Thomomys* bottae*).* Attachment 3 (Table 3-2) lists the wildlife species observed within the project areas.

SMWC Monitoring Well Options 1, 2, and 3

Fauna species observed at the three proposed well sites were limited because of agricultural activity in the area during the field visit. Species observed within in the vicinity consist of Swainson's hawk, turkey vulture *(Cathartes aura)*, mallard duck, European starling *(Sturnus vulgaris)*, and red-winged blackbird. Attachment 3 (Table 3-2) lists the wildlife species observed within the project areas.

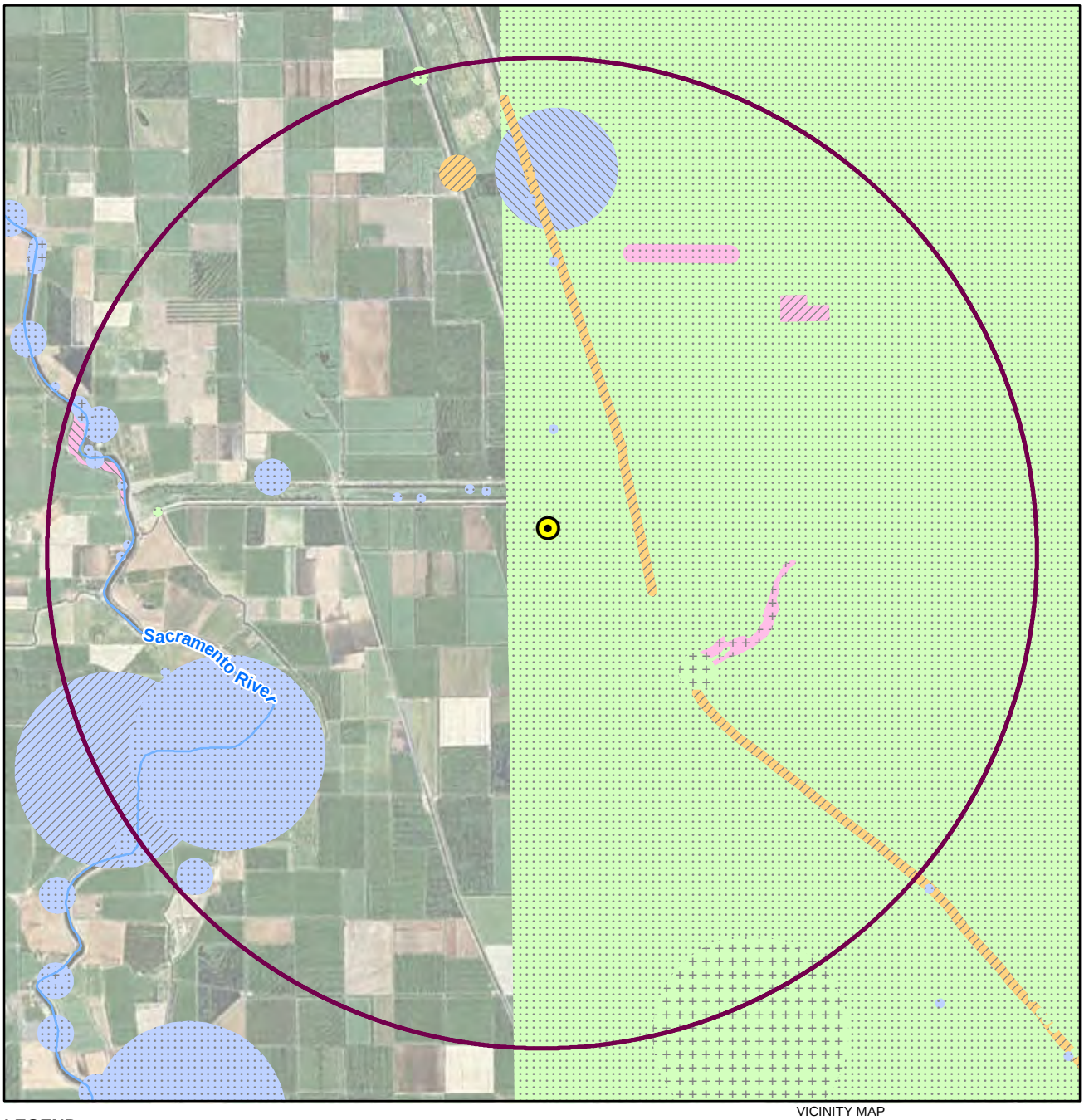
Sensitive Habitats

PMWC Production Well

According to field observation and review of the results from database searches, the sensitive species potentially occurring within the project vicinity include the giant garter snake (*Thamnophis gigas*) (GGS), a federal and state threatened species that uses rice fields and canals, and Swainson's hawk (*Buteo swainsoni*), a state threatened species that uses riparian forests and other large trees for nesting. The agricultural drainage and irrigation canals and wetlands are suitable aquatic habitats for GGS. The narrow riparian band of oaks southwest of the site provides suitable nesting and roosting habitat for Swainson's hawk. Figure 1a shows documented special-status species near the project location.

SMWC Monitoring Well Options 1, 2, and 3

According to field observation and review of the results from database searches, the sensitive species potentially occurring within the project vicinity include GGS and Swainson's hawk. The agricultural drainage and irrigation canals and rice fields are suitable aquatic habitats for GGS. The riparian habitat along the Sutter Bypass and eucalyptus trees in the area provide nesting opportunities for Swainson's hawk. Figures 2d, 2e, and 2f show documented special-status species near Well Options 1, 2, and 3, respectively.



LEGEND

- MONITORING WELL
- 5-MILE BUFFER

CALIFORNIA NATURAL DIVERSITY DATABASE

- California black rail
- California linderiella
- Coastal and Valley Freshwater Marsh
- Great Valley Mixed Riparian Forest
- Swainson's hawk
- Wright's trichocoronis
- bank swallow
- cackling goose
- giant garter snake
- tricolored blackbird
- veiny monardella
- western pond turtle
- woolly rose-mallow

N

0 8,500
Feet

VICINITY MAP

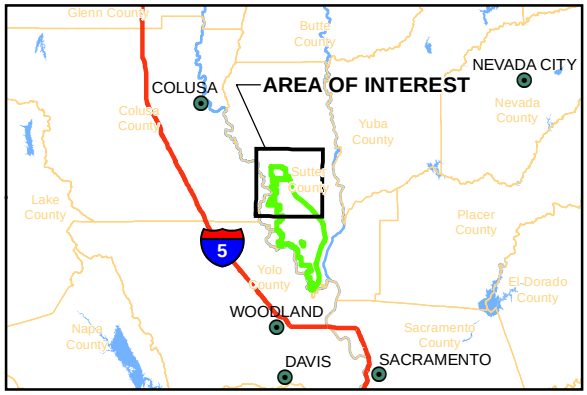
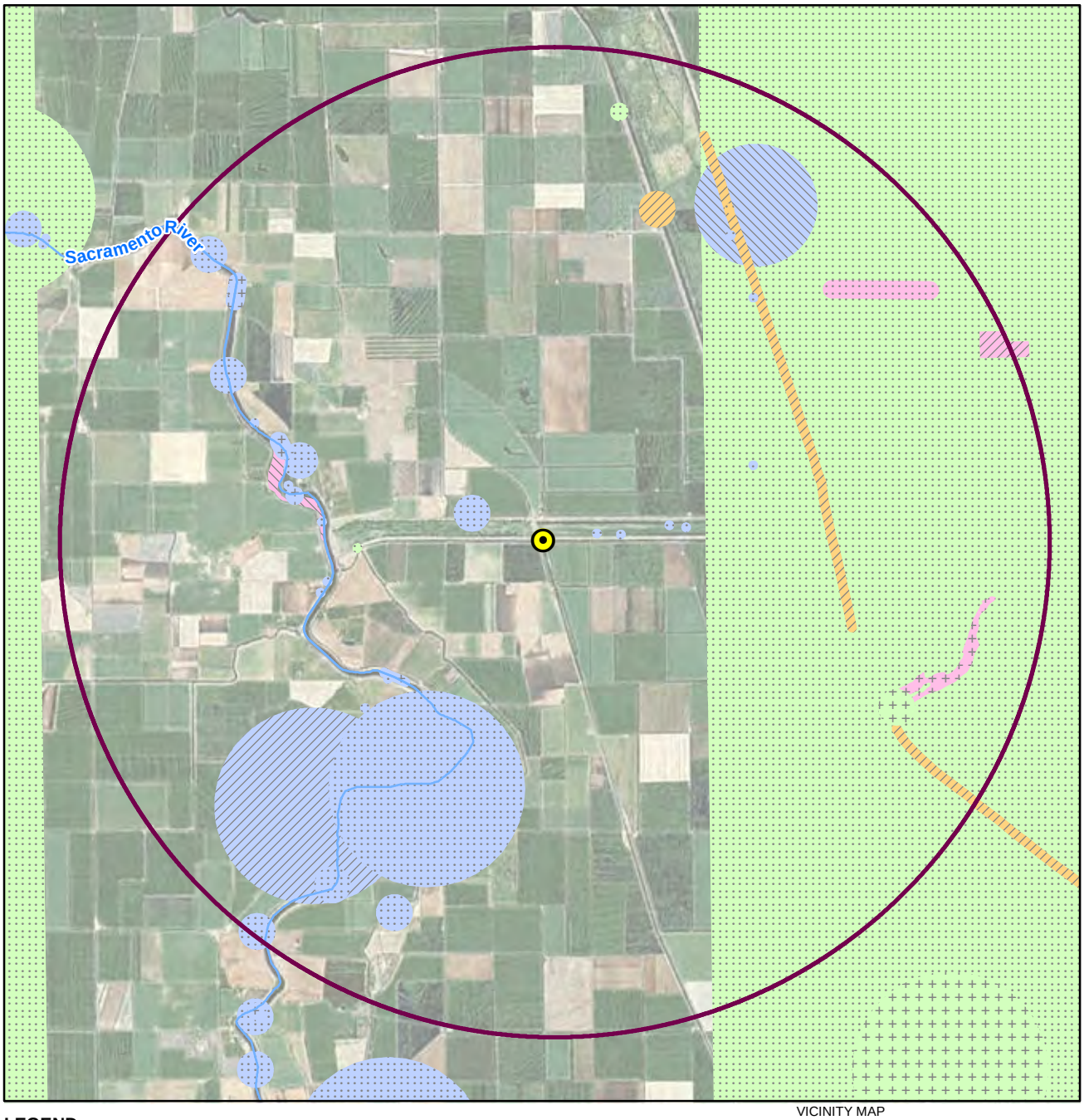


FIGURE 2d
SUTTER MUTUAL WATER COMPANY BIOLOGICAL SURVEY OPTION 1

PROPOSITION 50 GROUNDWATER WELL PRODUCTION ELEMENT

CH2MHILL

\\ODIN\PROJ\NORTHERNCALIFORNIAWA\SACVALLEYPROP50\FIGURES\MXDS\SUTTER\FIG2A_SUTTER_BIO_5MI_OPTION1.MXD ECLARK1 4/15/2011 09:38:08



LEGEND

- MONITORING WELL
- 5-MILE BUFFER

CALIFORNIA NATURAL DIVERSITY DATABASE

- California black rail
- California linderiella
- Coastal and Valley Freshwater Marsh
- Great Valley Mixed Riparian Forest
- Swainson's hawk
- Wright's trichocoronis
- bank swallow
- cackling goose
- giant garter snake
- tricolored blackbird
- veiny monardella
- western pond turtle
- woolly rose-mallow

N

0 8,500
Feet

VICINITY MAP

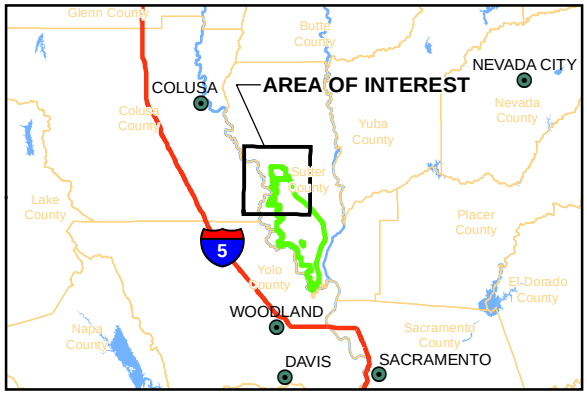
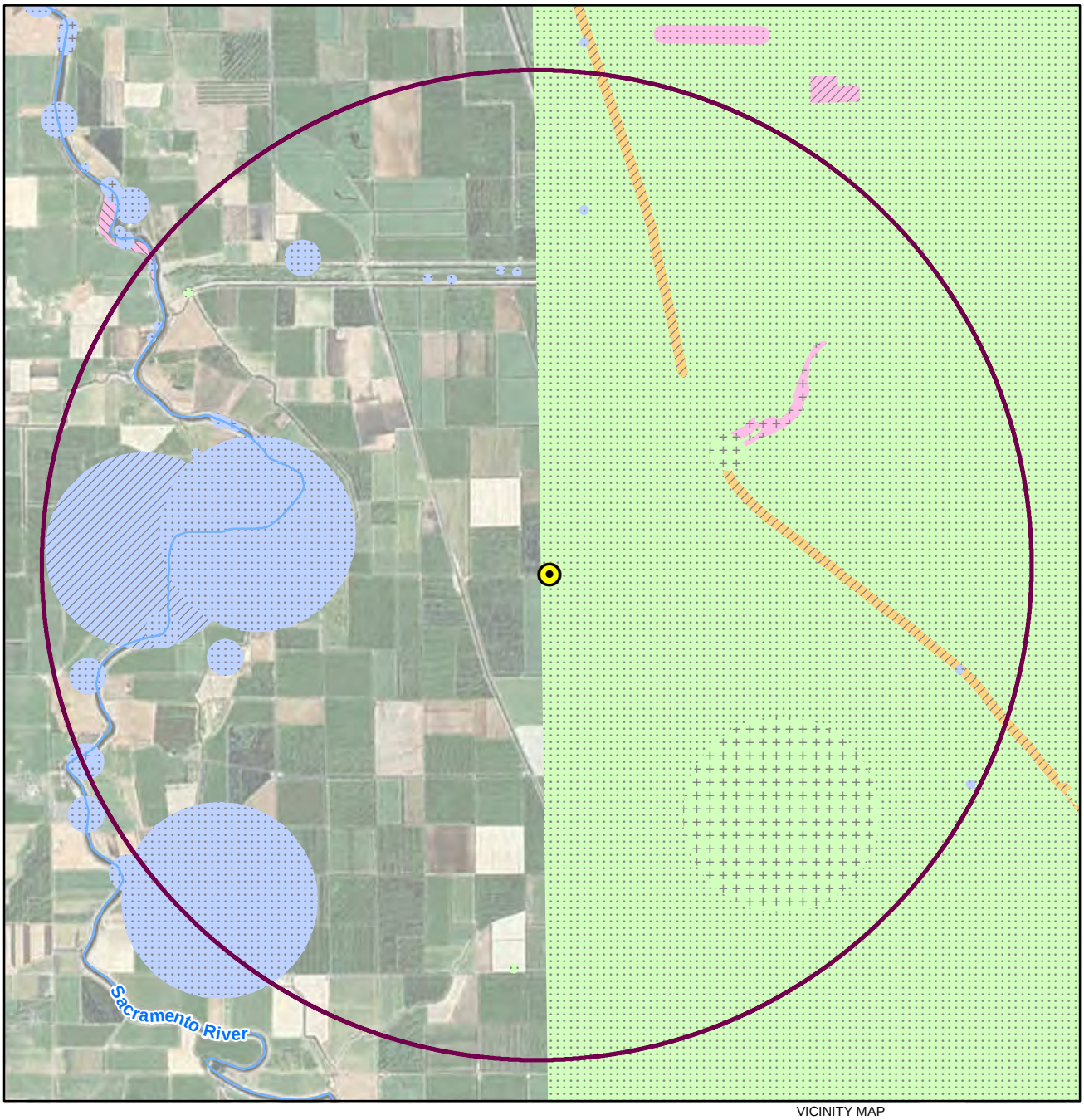


FIGURE 2e
SUTTER MUTUAL WATER COMPANY BIOLOGICAL SURVEY OPTION 2

PROPOSITION 50 GROUNDWATER WELL PRODUCTION ELEMENT

CH2MHILL

\\ODIN\PROJ\NORTHERNCALIFORNIAWA\SACVALLEYPROP50\FIGURES\MXDS\SUTTER\FIG2B_SUTTER_BIO_5MI_OPTION2.MXD ECLARK1 4/15/2011 09:40:37



LEGEND

- MONITORING WELL
- 5-MILE BUFFER

CALIFORNIA NATURAL DIVERSITY DATABASE

- California black rail
- California linderiella
- Coastal and Valley Freshwater Marsh
- Great Valley Mixed Riparian Forest
- Swainson's hawk
- Wright's trichocoronis
- bank swallow
- giant garter snake
- tricolored blackbird
- veiny monardella
- woolly rose-mallow

N

0 8,500
Feet

VICINITY MAP

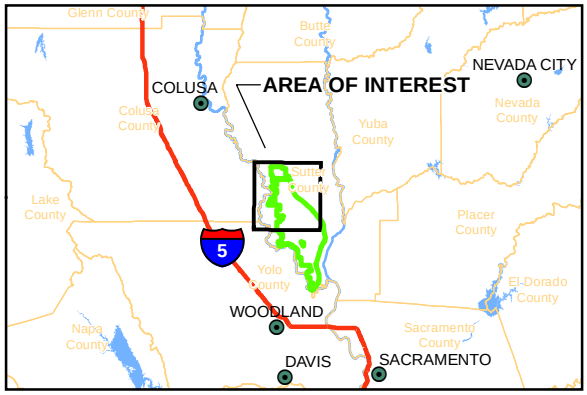


FIGURE 2f
SUTTER MUTUAL WATER COMPANY
BIOLOGICAL SURVEY OPTION 3

PROPOSITION 50 GROUNDWATER WELL PRODUCTION ELEMENT

CH2MHILL

Wetlands

PMWC Production Well

The well location is approximately 60 feet north of a wetland sanctuary. The wetland is separated by a concrete-lined irrigation canal owned and operated by PMWC. Two fence lines separate the wetland from the well site. The cement-lined canal provides a barrier between the well site and the wetland. This configuration would not allow sediments or fill to enter the wetland.

SMWC Monitoring Well Options 1, 2, and 3

None of the monitoring well locations has wetland habitat within the well construction areas.

Rare Plants

Rare plants with the potential to occur within the project area were identified using the CNDDB and CNPS database and are listed in Attachment 2. Eleven plants species were identified on the Sutter Causeway, Gilsizer Slough, Kirkville, Dunnigan, Grimes, and Tisdale Weir USGS 7.5-minute quadrangles. Ten of the plant species are not likely to occur within the project sites because suitable habitat is not present. All of the well sites are routinely maintained through mechanical means such as mowing, agricultural cultivation, or pesticide application.

Although not observed during the site visit, the round-leaved filaree *(California macrophylla),* a CNPS 1B species, has the potential to occur within the three SMWC project areas. CNPS status codes are defined in Attachment 2 (Table 2-1). Round-leaved filaree occurs in valley and foothill grasslands and cismontane woodlands with clay soils and in disturbed soils.

Giant Garter Snakes

GGS habitat was observed at the PMWC well site and all three of the SMWC well options; thus, the PMWC and all three of the SMWC well options have the potential to support GGS.

Fishery Resources

No fishery resources are associated with the PMWC or SMWC well sites.

Raptors and Migratory Birds

Well sites were inspected for raptors and migratory birds and suitable nesting habitat. Both the PMWC and SMWC well sites have the potential to support ground- and tree-nesting birds, such as killdeer (*Charadrius vociferus*), red-tailed hawk, and Swainson's hawk during the breeding season.

PMWC Production Well

The project site has potential for nesting Swainson's hawk; however, because the surveys were cursory, no active nests were observed.

SMWC Monitoring Well Options 1, 2, and 3

During the field visit, several raptors, including the Swainson's hawk, were observed at or near the three well sites. Several raptor-size nest sites were observed within the cottonwood and willow riparian canopy along the Sutter Bypass near Well Options 1 and 2.

Roosting Bats

No structures or other suitable features were in the vicinity that would provide roosting sites for bat species. No special-status bat species were identified in the CNDDB search. Therefore, the PMWC and SMWC well sites are not expected to affect roosting bat species.

Avoidance and Minimization of Biological Impacts

Using information gathered from the literature searches and field surveys about habitat and sensitive species near the proposed project, the following avoidance measures are recommended to reduce the overall impact. To the extent possible, new facilities and construction support areas (e.g., new temporary access roads, new staging areas, and new stockpile areas) should be located outside a 250-foot buffer from all wetland habitats.

This habitat avoidance measure minimizes impacts on special-status species; however, these species may use non-native habitats, require larger habitat buffers, or require seasonal restrictions. To further minimize impacts, the potential for suitable habitat for listed or proposed species to occur at the project sites was assessed. New facilities and construction activities should be located, to the extent possible, outside species-specific buffer areas around native habitats (such as vernal pools, wetlands, riparian vegetation, native grasslands, and oak woodlands). Table 1 lists these buffer areas.

TABLE 1
Avoidance Distances and Restrictions for Listed Species
PMWC/SMWC Groundwater Production Element Project

Species	Buffer	Seasonal Restrictions
Giant garter snake	200 feet from banks of aquatic habitat, unless buffers are reduced during consultation with USFWS.	Construction activities in snake habitat should be conducted between May 1 and October 1 unless appropriate measures have been taken to ensure no adverse impacts on GGS in coordination with USFWS.
Swainson's hawk	0.5 mile from an active nest in non-urban area.	No construction activities in buffer area should be conducted between March 1 and September 15 or until the young have fledged unless appropriate measures have been taken to ensure no adverse impacts on Swainson's hawk in coordination with CDFG.

Conclusion and Recommendations

The overall project footprint would not affect wetlands, potential Waters of the United States, or Waters of the State of California. Consultation with the USFWS should be conducted for the PMWC groundwater well site and all SMWC monitoring well site options for giant garter snake as all of these sites are within the 200-foot upland buffer for this species. The avoidance and minimization measures described herein would protect special-status and migratory bird species that could be affected by the proposed project.

- Consultation with USFWS should be conducted for the PMWC groundwater production well and the three SMWC monitoring well options for GGS, as all of these sites are within the 200-foot upland buffer for this species. Mitigation and impact avoidance measures for GGS would be determined during consultation. Implementation of mitigation measures (such as work in the active period [May 1 to October 1], exclusion fencing around well activity, and a Worker Environmental Training Program) would minimize impacts on this species as outlined in the measures listed below. If work is required between October 2 and April 30 (during the inactive season), PMWC and SMWC proposes to implement the following measures:
  - Preconstruction surveys for GGS would be conducted by a qualified USFWS-approved biologist no more than 24 hours prior to construction activities.
  - All areas to be affected as part of the project within GGS habitat would be disturbed (e.g., grubbed) during the active period (before October 1). To help prevent injury or mortality to GGS that may occupy burrows in the project area, a qualified USFWS-approved biologist would be present before and during construction activities to identify and protect potential burrows and GGS.
  - If an active or inactive GGS individual is encountered within the construction zone, construction would stop until USFWS is contacted and advises how and when to proceed.
  - USFWS-approved environmental awareness training would be provided to work crews before construction begins.
- If construction occurs during the nesting season, preconstruction surveys should be conducted by a qualified biologist within 14 days prior to construction to detect the presence of nesting birds within or adjacent to the proposed well locations. If construction occurs during the non-breeding season for nesting birds (September 1 through February 14), preconstruction surveys are not required.
- The survey area should include a survey buffer of 500 feet. Surveys specifically for nesting Swainson's hawk should be conducted within 0.5 mile of designated disturbance areas.
- If active nests (including Swainson's hawk) are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest, the size of which is to be determined by the qualified biologist or in consultation with CDFG for certain species) would be established and a nest monitoring plan developed for all active nest.

- Consultation with CDFG would be required for construction within 0.5 mile of an active Swainson's hawk nest to ensure that no take of Swainson's hawk occurs during project construction. Follow-up surveys or onsite monitoring could be included as part of CDFG's conditions and mitigation measures for construction within 0.5 mile of nesting Swainson's hawk.

References

California Department of Fish and Game. California Natural Diversity Database (CNDDB). 2011. Accessed May 2011. Available at: https://nrmsecure.dfg.ca.gov/myaccount/login.aspx?ReturnUrl=/cnddb/view/updates.aspx.

California Native Plant Society (CNPS). 2011. Inventory of Rare and Endangered Plants. Accessed May 2011. Available at: http://www.cnps.org/cnps/rareplants/inventory.

Hickman, James C., Editor. 1993. *The Jepson Manual: Higher Plants of California*. Berkeley, California: University of California Press.

Jepson Interchange. 2008. Jepson Flora Project Online Interchange for California Floristics. University of California, Berkley. Available at: http://ucjeps.berkeley.edu/interchange.html.

Reed, P. B. 1988. National List of Plant Species that Occur in Wetlands; California (Region 0). U.S. Fish and Wildlife Service. Available at: http://www.fws.gov/nwi/Plants/list88.html.

U.S. Fish and Wildlife Service Sacramento Office. Endangered Species Branch. 2011. Accessed May 2011. Available at: http://fws.gov/sacramento/es/spp_list/auto_list.cfm.

Attachment 1
Site Photographs

PHOTOGRAPH 1
PMWC Well Location – View west at proposed well site, irrigation/drainage ditch on left side of photograph with wheat field to right.

PHOTOGRAPH 2
PMWC Well Location – View east from well toward Cranmore Road.

PHOTOGRAPH 3
PMWC Well Location – View east along irrigation drainage canal. Well pad on right side of photograph.

PHOTOGRAPH 4
PMWC Well Location – View southwest from the proposed well site. Photograph shows narrow riparian and wetland habitat in background.

PHOTOGRAPH 5
PMWC Well Location – View east. Photograph shows cement-lined canal and physical separation from the wetland sanctuary to the south of the proposed well site.

PHOTOGRAPH 6
SMWC Option 1 – View north from well site, photograph shows highly disturbed irrigation ditches and rice fields in the area. Tree line in background is the margin of Sutter Bypass.

PHOTOGRAPH 7
SMWC Option 1 – View north of typical irrigation drainages in the vicinity.

PHOTOGRAPH 8
SMWC Option 2 – View north from the proposed well location. Main canal in foreground with the Tisdale Bypass behind the levee.

PHOTOGRAPH 8
SMWC Option 2 – View east. Irrigation canal and corn fields south of the Option 2 well.

PHOTOGRAPH 9
SMWC Option 3 – View east. Wide spot on the south side of Everglade Road is the proposed well location. Row crops to the south; rice fields to the north.

PHOTOGRAPH 10
SMWC Option 3 – View east, on the north side of the road, showing drainage canal adjacent to the road. Proposed well site is on the right side of photograph behind vehicles.

Attachment 2
CNDDB, CNPS, and USFWS Species Lists

TABLE 2-1
Special-status Plant and Animal Species Reported Near the PMWC and SMWC Groundwater Production Element Project
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area
Birds					
Agelaius tricolor	tricolored black bird	--/CSC/--	Breeds near fresh water, preferably in emergent wetlands, with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs. Feeds in grassland and cropland habitats.	February to May	Low – suitable nesting habitat is well outside work areas for PMWC well. No suitable habitat near SMWC well sites.
Buteo swainsoni	Swainson's hawk	--/ST--	Riparian areas adjacent to grasslands and other areas with suitable trees for nesting and foraging habitat including ag lands.	March to September	High – suitable nesting and forage habitat within 0.5 mile of PMWC and SMWC well sites.
Charadrius montanus	mountain plover	PT/--/--	Prefers sparse to barren ground for foraging and breeding. Found in grasslands and agricultural lands with suitable habitat.	March to June	Low – low quality nesting and foraging habitat.
Coccyzus americanus occidentalis	western yellow-billed cuckoo (nesting)	FC/SE/--	Riparian woodlands composed of dense cottonwoods and willows.	June to September	Low – no suitable nesting habitat or foraging habitat within the immediate project vicinity of PMWC or SMWC well sites.
Laterallus jamaicensis coturniculus	California black rail	--/ST/--	Fresh, brackish, and salt water marshes. Found from the San Francisco Bay to the foothills in scattered populations.	February to June	Low – potential nesting habitat occurs near the PMWC well site. No suitable habitat near SMWC well sites.
Riparia riparia	bank swallow	--/ST/--	Generally bound to the river with eroding banks that it uses for nesting. Colony nester.	May to July	Highly unlikely – no suitable habitat in the project areas.
Mammals					
No mammals listed					

TABLE 2-1
Special-status Plant and Animal Species Reported Near the PMWC and SMWC Groundwater Production Element Project
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area
Amphibians and Reptiles					
Emys marmorata	western pond turtle	--/CSC/--	Requires some slack- or slow-water aquatic habitat. Often reaches higher densities where many aerial and aquatic basking sites are available. Hatchlings require shallow-water habitat with relatively dense submergent or short emergent vegetation in which to forage. Also requires an upland oviposition site (high clay or silt fraction soil, on an unshaded slope) near the aquatic site.	April to May	Low – potentially suitable habitat at the PMWC well site in the adjacent wetlands. Potential suitable habitat along main irrigation canal near SMWC well sites.
Ambystoma californiense	California tiger salamander	FT/CSC/CE	Annual grasslands and grassy understory of valley-foothill hardwood habitats. Need underground refuges and vernal pools or other seasonal water sources for breeding.	February to June	Highly unlikely – no suitable habitat in the project areas.
Rana draytonii	California red-legged frog	FT/CSC/--	Found in humid forests, woodlands, grasslands, and streamsides with plant cover. Most common in lowlands or foothills. Frequently found in woods adjacent to streams. Breeding habitat is in permanent water sources: lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. Typically without predatory fish, requires adequate hibernacula such as small mammal burrows and moist leaf litter. From sea level to 8,000 feet.	November to April; eggs hatch within 4 weeks and tadpoles metamorphose within 4 to 7 months	Low – no temporary pools and stream flows for breeding. Potential habitat within the wetland adjacent to PMWC well site.

TABLE 2-1
Special-status Plant and Animal Species Reported Near the PMWC and SMWC Groundwater Production Element Project
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area
Thamnophis gigas	giant garter snake	FT/ST/--	Highly aquatic. Found primarily in marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields, and occasionally in slow-moving creeks. Prefers locations with vegetation close to the water for basking. From sea level to 400 feet.	May to September	High – suitable habitat present at all well sites.
Invertebrates					
Branchinecta lynchi	vernal pool fairy shrimp	FT/--/--	Found in vernal pools (seasonal wetlands).	October to May	Highly unlikely – no suitable habitat in the project areas.
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT/--/--	Host plant elderberry (*Sambucus mexicana*). Generally found in riparian stands of clustered host plant.	April to June	Highly unlikely – no suitable host plant in the project areas.
Linderiella occidentalis	California linderiella	--/--/--			
Lepidurus packardi	vernal pool tadpole shrimp	FE/--/--	Inhabits vernal pools and swales in the Sacramento Valley and San Joaquin Valley containing clear to highly turbid water. Commonly found in grass-bottomed swales of unplowed grasslands. Some inhabit mud-bottomed and highly turbid pools.	October to May	Highly unlikely – no suitable habitat in the project areas.
Fish					
Acipenser medirostris	green sturgeon	FT[a]/CSC[b]/--	Sturgeon use both freshwater and saltwater habitat. Green sturgeons spawn in deep pools or “holes” in large, turbulent, freshwater river mainstems. Specific spawning habitat preferences are unclear, but eggs likely are broadcast over large	Adults typically migrate into fresh water beginning in late February; spawning occurs from March to July, with peak activity	Highly unlikely – no suitable habitat in the project areas.

TABLE 2-1
Special-status Plant and Animal Species Reported Near the PMWC and SMWC Groundwater Production Element Project
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area
			cobble substrates, but range from clean sand to bedrock substrates. Adults live in oceanic waters, bays, and estuaries when not spawning. Green sturgeons are known to forage in estuaries and bays ranging from San Francisco Bay to British Columbia.	from April to June	
Hypomesus transpacificus	Delta smelt	FT/--/--	Found only in the Sacramento-San Joaquin Estuary. Resides primarily in the interface between salt water and fresh water. Decline in population caused by reductions in Delta water outflow.	May	Not within home range of this species.
Oncorhynchus mykiss	Central Valley steelhead	FT/--/--	Found in tributaries to the San Francisco Bay, including the South Bay. Pass through the San Francisco Estuary during migration to streams for spawning, and during outmigration to the ocean. Spawns in small streams and tributaries with cold, clean water flowing over graveled bottoms and deep pools.	Migrates July to May; spawns December to April	Highly unlikely – no suitable habitat in the project areas.
Oncorhynchus tshawytscha	winter-run Chinook salmon	FE/SE/--	Sacramento River and tributaries. Spawning takes place in swift, moderately shallow riffles or in areas along fast-moving banks with plentiful gravelly substrate. The gravel needs to be clean, loose, and stable for the duration of the larval stage.	Migrates December through early August; spawns in the upper mainstem Sacramento River from mid-April through August	Highly unlikely – no suitable habitat in the project areas.
Oncorhynchus tshawytscha	Central Valley spring-run Chinook salmon	FT/--/--	Found in tributaries to the San Francisco Bay including the Sacramento River watersheds. Passes through the San Francisco Estuary during migration to streams for spawning, and during	Migrates during spring; holds in headwaters areas, and spawns during late summer and	Highly unlikely – no suitable habitat in the project areas.

TABLE 2-1
Special-status Plant and Animal Species Reported Near the PMWC and SMWC Groundwater Production Element Project
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area
			outmigration to the ocean. Spawns in well-oxygenated water in swift, shallow riffles, or at edges of fast runs with loose gravel.	early fall	
Plants					
Astragalus tener var. *ferrisiae*	Farris' milk-vetch	--/--/CNPS 1B.1	Meadows and seeps in the Central Valley and foothill grasslands. Alkaline.	April to May	Low – habitat is not the typical habitat community in which this species is found.
Atriplex joaquiniana	San Joaquin spearscale	--/--/CNPS 1B.2	Meadows and seeps, playas, vernal pools in chenopod scrub or valley and foothill grasslands with wet alkaline soils.	April to October	Low – habitat is not the typical habitat community in which this species is found.
California macrophylla	round-leaved filaree	--/--/CNPS 1B.1	Found in valley and foothill grasslands and cismontane woodlands with clay soils.	March to May	Moderate – habitat is present.
Chlorapyron palmatum	Palmate-bracted bird's beak	FE/SE/CNPS 1B.1	Species is restricted to seasonally flooded, saline-alkali soils in lowland plains and basins at elevations of less than 155 meters (509 feet).	May to October	Low – habitat is not the typical habitat community in which this species is found.
Hibiscus lasiocarpos var. *occidentalis*	wooly rose-mallow	--/--/CNPS 1B.2	Found along the margins of marshes, swamps, wetlands and waterways (freshwater).	June to September	Low – habitat is not the typical habitat community in which this species is found.
Lasthenia glabrata spp. *Coulteri*	Coulter's goldfields	--/--/CNPS 1B.1	Valley and foothill grasslands within wetland vernal pools, alkali playa, and marshes.	February to June	Low – habitat is not the typical habitat community in which this species is found.
Layia septentrionalis	Colusa layia	--/--/CNPS 1B.2	Valley and foothill grasslands, woodlands, on serpentine or sandy soils.	April to May	Low – habitat is not the typical habitat community in which this species is found.

TABLE 2-1
Special-status Plant and Animal Species Reported Near the PMWC and SMWC Groundwater Production Element Project
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area
Monardella douglasii ssp. *venosa*	veiny monardella	--/--/CNPS 1B.1	Flat to gently sloping terrain in the annual grassland component of a foothill woodland plant community, from 60 to 410 meters (197 to 1,345 feet) elevation. This species occurs only in lenses of dark gray, deeply cracking clay within alluvium derived from Tuscan Mudflow rock outcrops.	May to July	Low – habitat is not the typical habitat community in which this species is found.
Navarretia leucocephala ssp. *Bakeri*	Baker's navarretia	--/--/CNPS 1B.1	Vernal pools, meadows, seeps, and wetlands in cismontane woodland, lower montane coniferous forest, valley and foothill grasslands.	April to July	Low – habitat is not the typical habitat community in which this species is found.
Trichocoronis wrightii var. *wrightii*	Wright's trichocoronis	--/--/CNPS 2.1	Found in vernal pools, meadows, seeps, marshes, and swamps	May to September	Low – habitat is not the typical habitat community in which this species is found.
Pseudobahia bahiifolia	Hartweg's golden sunburst	FE/SE/CNPS 1B.1	Found in vernal pool grasslands. Hartweg's golden sunburst prefers the top of "mima" mound topography where grass cover is minimal.	March to April	Highly unlikely – no suitable habitat in the project areas.

[a]Federal listing includes all spawning populations south of the Eel River.

[b]National Marine Fisheries Service "special concern" refers to all spawning populations north of the Eel River.

Sources:

California Department of Fish and Game (CDFG). California Natural Diversity Database (CNDDB). 2011. Available at: https://nrmsecure.dfg.ca.gov/myaccount/login.aspx?ReturnUrl=/cnddb/view/updates. aspx. Accessed April 2011.

California Native Plant Society (CNPS). 2011. *Inventory of Rare and Endangered Plants*. Available at: http://www.cnps.org/cnps/rareplants/inventory. Accessed April 2011.

U.S. Fish and Wildlife Service Sacramento Office. Endangered Species Branch. 2011. Available at: http://www.fws.gov/sacramento/es/spp_lists/auto_list_form.cfm. Accessed April 2011.

TABLE 2-1
Special-status Plant and Animal Species Reported Near the PMWC and SMWC Groundwater Production Element Project
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area

Notes:

--/--/-- = No federal, state, or CNPS status

Federal:
FC = Federal Candidate for Listing as Threatened or Endangered
FD = Federally Delisted Species
FE = Federal Endangered
FT = Federal Threatened

State:
CSC = California Species of Concern
SE = State Endangered
ST = State Threatened
WL = Watch List

CNPS:
CNPS 1A = Species is Presumed Extinct in California
CNPS 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere
CNPS 2 = Plants Rare, Threatened, or Endangered in California but More Common Elsewhere

CNPS Threat Ranks:
.1 = Seriously threatened in California (high degree/immediacy of threat)
.2 = Fairly threatened in California (moderate degree/immediacy of threat)
.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

Attachment 3
Flora and Fauna Species Observation Lists

TABLE 3-1
Plant Species Observed at the Project Site
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Growth Habitat	Indicator Status[a]
Asteraceae			
Artemisia vulgaris	mugwort	Herb	
Centaurea solstitialis	yellow star-thistle	Herb	NL
Lactuca serriola	prickly lettuce	Herb	FAC
Silybum marianum	milk thistle	Herb	NL
Brassicaceae			
Brassica nigra	black mustard	Herb	NL
Lepidium latifolium	perennial pepperweed	Herb	
Raphanus sativus	radish	Herb	NL
Cyperaceae			
Cyperus esculentus	yellow nutgrass	Herb	FACW
Schoenoplectus acutus var. *acutus*	hardstem bulrush	Herb	OBL
Fagaceae			
Quercus wislizenii	interior live oak	Tree	NL
Quercus lobata	Valley oak	Tree	FACU
Geraniaceae			
Erodium botrys	broadleaf filaree	Herb	NL
Erodium cicutarium	redstem filaree	Herb	NL
Malvaceae			
Malvaceae sp.	globe mallow	Herb	NL
Poaceae			
Avena fatua	wild oat	Herb	NL
Bromus diandrus	ripgut brome	Herb	NL
Bromus hordeaceus	soft chess brome	Herb	UPL
Hordeum murinum ssp. *glaucum*	foxtail	Herb	NL
Vulpia myuros	rat-tail fescue	Herb	NL
Polygonaceae			
Rumex crispus	curly dock	Herb	FACW
Rosaceae			
Rubus discolor	Himalayan blackberry	Shrub	FACW[b]

TABLE 3-1
Plant Species Observed at the Project Site
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Growth Habitat	Indicator Status[a]
Salicaceae			
Populus fremontii	Fremont cottonwood	Tree	FACW
Salix gooddingii	Gooding's willow	Tree	OBL
Salix lasiolepis	arroyo willow	Tree	FACW
Typhaceae			
Typha latifolia	broad-leaved cattail	Herb	OBL
Vebenaceace			
Verbena hastata	blue vervain	Herb	

[a]Indicator Status from the *National List of Plant Species that Occur in Wetlands; California (Region 0)* (Reed, 1988).

[b]Indicates a tentative status code assignment.

Source: U.S. Fish and Wildlife Service Sacramento Office. Endangered Species Branch. 2011. Available at: http://www.fws.gov/sacramento/es/spp_lists/auto_list_form.cfm. Accessed April 2011.

Notes:

+/- = Indicates greater (+) or lesser (-) tendency to occur in wetlands.

FAC = Facultative Status Species; Estimated probability of 33 to 67 percent chance of occurring in wetlands. Species not considered to be typically adapted for life in anaerobic soil conditions.

FACU = Facultative Upland Status; Estimated probability of 1 to 33 percent chance of occurring in wetlands.

FACW = Facultative Wetland Status; Estimated probability of 67 to 99 percent chance of occurring in wetlands.

NL = Not included on the 1988 list.

OBL = Obligate Species; Estimated probability of 99 percent chance of occurring in wetlands.

UPL = Obligate Upland; Estimated probability of less than 1 percent chance of occurring in wetlands.

TABLE 3-2
Wildlife Species Observed at the Project Site
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Observation Type
Birds		
Phalacrorax auratus	double-crested cormorant	Visual
Botarus lentiginosus	American bittern	Audible
Ardea herodias	great blue heron	Visual
Ardea alba	great egret	Visual
Anser albifrons	great white-front goose	Visual

TABLE 3-2
Wildlife Species Observed at the Project Site
PMWC and SMWC Groundwater Production Element Project

Scientific Name	Common Name	Observation Type
Branta canadensis	Canada goose	Visual
Aix sponsa	wood duck	Visual
Anas platyrhynchos	mallard duck	Visual
Circus cyaneus	northern harrier	Visual
Cathartes aura	turkey vulture	Visual
Buteo jamaicensis	red-tailed hawk	Visual
Buteo swainsoni	Swainson's hawk	Visual
Falco sparverius	American kestrel	Visual
Phasianus colchicus	ring-necked pheasant	Visual
Fulica americana	American coot	Visual
Zenaida macroura	mourning dove	Visual
Sayornis nigricans	black phoebe	Visual
Tyrannus verticalis	western kingbird	Visual
Aphelocoma californica	western scrub jay	Visual
Pica nuttalli	yellow-billed magpie	Visual
Corvus brachyrhynchos	American crow	Visual
Tachycineta bicolor	tree swallow	Visual
Petrochelidon pyrrhonota	cliff swallow	Visual
Cistothorus palustris	marsh wren	Visual
Sturnus vulgaris	European starling	Visual
Dendroica coronata	yellow-rumped warbler	Visual
Carpodacus mexicanus	house finch	Visual
Agelaius phoeniceus	red-winged blackbird	Visual
Mammals		
Thomomys bottae	pocket gopher	Visual
Otospermophilus beecheyi	California ground squirrel	Visual
Procyon lotor	raccoon	Tracks
Odocoileus hemionus columbianus	black-tailed deer	Tracks
Lepus californicus	black-tailed hare	Visual