APPENDIX 5.3

Biological Resources Assessment

MOORE BIOLOGICAL CONSULTANTS

March 26, 2013

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Subject: BIOLOGICAL RESOURCES ASSESSMENT AT THE 165+/- ACRE "MONTREUX" PROJECT SITE (SUBDIVISION 8279), PITTSBURG, CALIFORNIA

Dear Noelle:

Thank you for asking Moore Biological Consultants to conduct a baseline biological resources assessment of the "Montreux" site in Pittsburg, California (Figures 1 and 2). The focus of our work was to document existing biological resources in the site, conduct a survey to determine presence or absence of waters of the U.S. and wetlands, and search for suitable habitat for or presence of special-status species in the site. This letter report details the methodology and results of our investigation.

Methods:

Prior to the field surveys, we conducted a search of California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database; an updated search was conducted in February 2013 (CNDDB, 2013). This information was used to identify special-status species that have been previously documented in the greater project vicinity or have the potential to occur based on presence of

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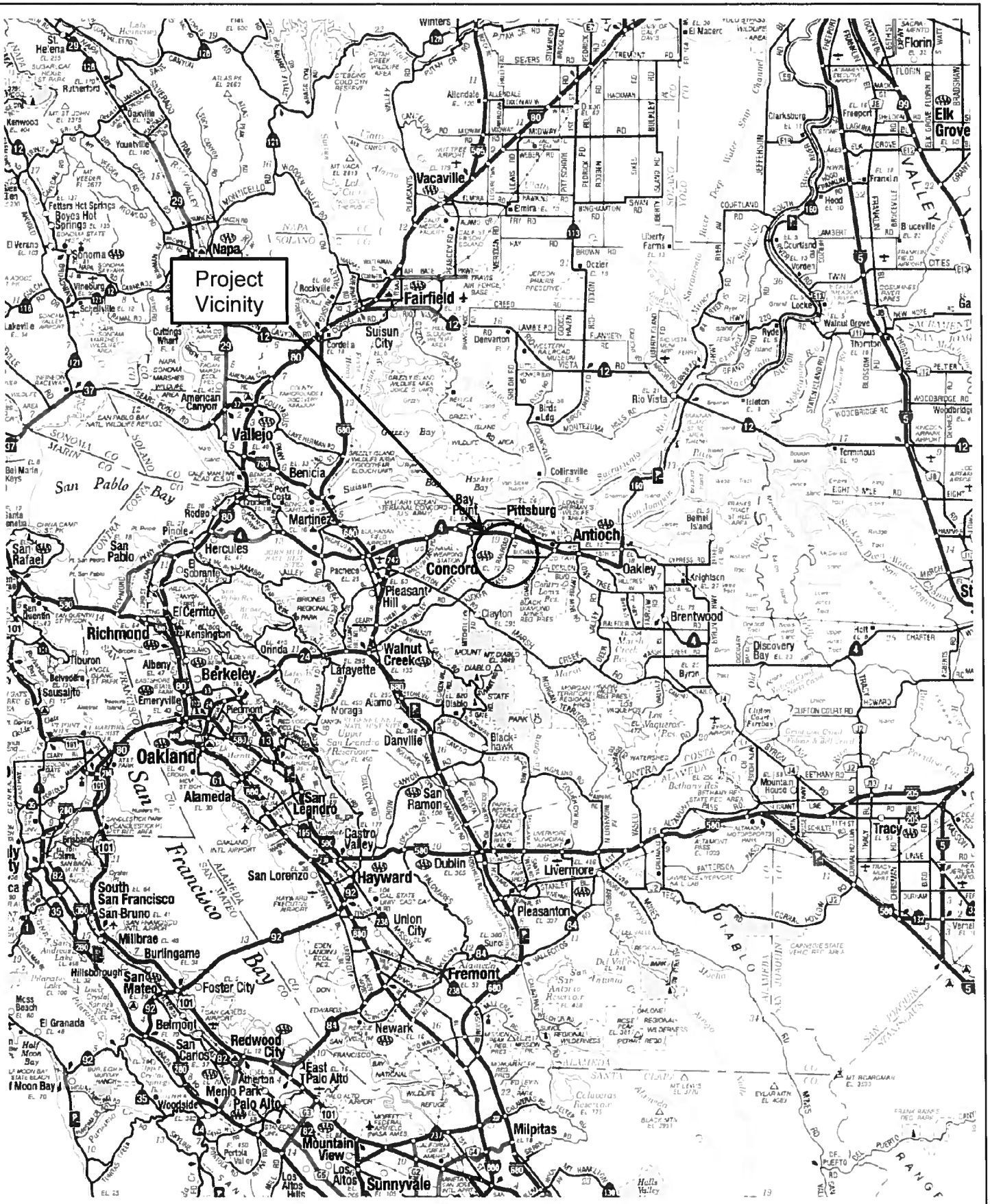

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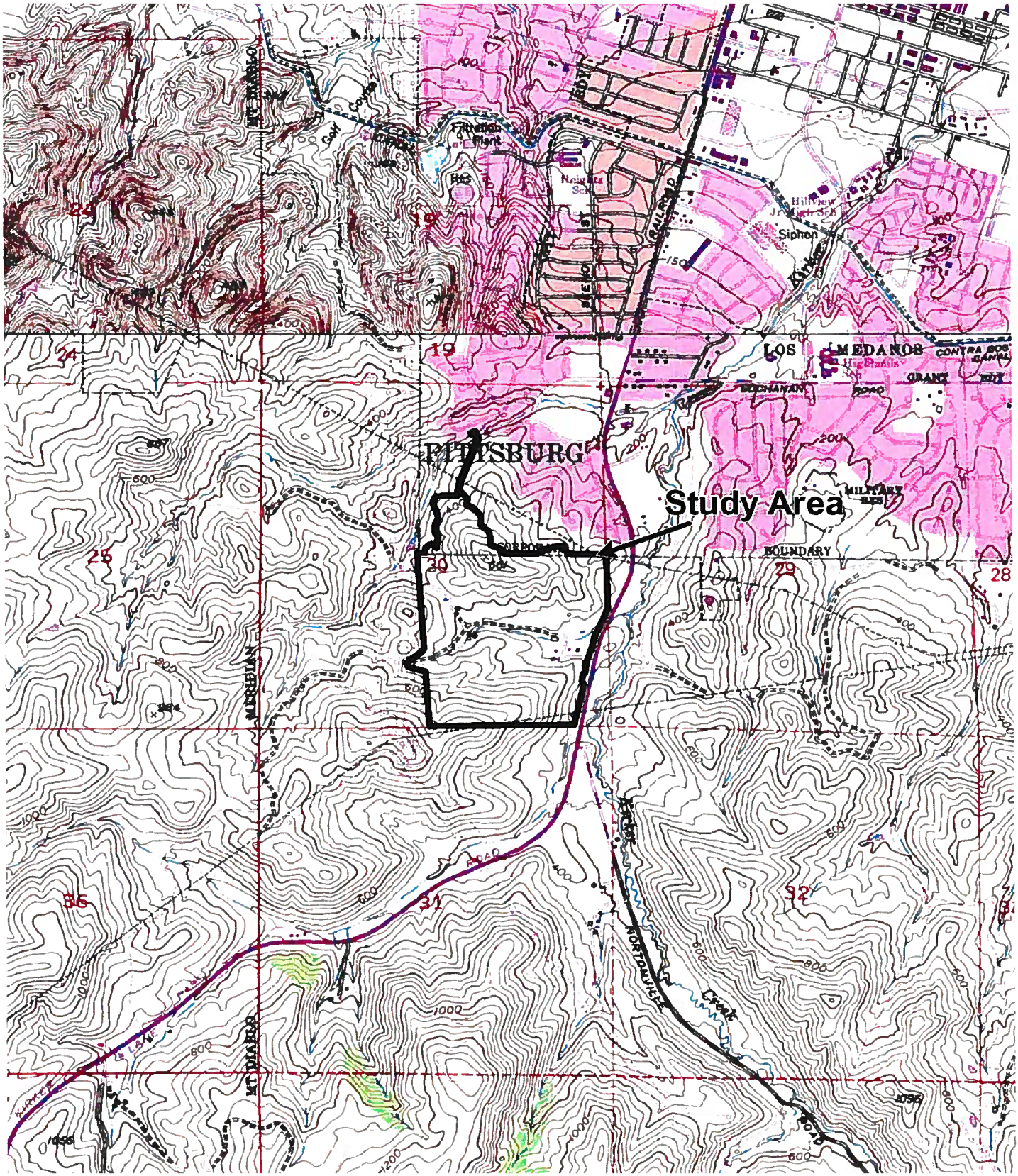
0 18 Miles

N W E S

FIGURE 1

PROJECT VICINITY



Source: USGS 7.5-minute Clayton topographic quadrangle

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0 2000 4000 Feet

N W E S

FIGURE 2

PROJECT LOCATION

suitable habitat and geographical distribution. As the site is located near the intersection of the 7.5-minute USGS Clayton, Antioch South, Antioch North, and Honker Bay topographic quadrangles, the CNDDB search encompassed portions of these quadrangles. The CNDDB search area includes lands within 5 miles of the site boundaries, which is an area of approximately 85 square miles surrounding the site.

Field surveys were conducted on June 28, July 19, and September 29, 2010, November 1, 2011, June 5, 2012, and March 18, 2013. The surveys consisted of driving and walking around the site, making observations and noting habitat conditions, surrounding land uses, and plant and wildlife species. We conducted a delineation of potentially jurisdictional Waters of the U.S. and wetlands as defined by the U.S. Army Corps of Engineers (ACOE, 1987; 2008), and a search for special-status species, and potentially suitable habitat for special-status species. Additionally, trees in the site were assessed for the potential use by nesting raptors, especially Swainson's hawk (*Buteo swainsoni*) and burrows in the area were inspected for burrowing owls (*Athene cunicularia*) or evidence of past occupancy.

Results

LOCATION: The 165+/- acre site is located in Pittsburg, in Contra Costa County, California (Figure 1). The site is within Section 30 in Township 2 North, Range 1 East of the USGS 7.5-minute Clayton topographic quadrangle (Figure 2). This biological assessment encompasses the 148+/- acre "Montreux Tentative Map" site, plus 17+/- acres of grasslands to the north and west that will be graded as a part of the project.

SURROUNDING LAND USES: Surrounding land uses in this portion of Contra Costa County are primarily agriculture and open space, interspersed with areas of relatively new residential and commercial development. There are subdivisions

to the north and northeast of the site, and relatively steep and rolling hills of annual grassland to the east, south, and west of the site.

TOPOGRAPHY AND GENERAL SETTING: The property consists of relatively steep and rolling hills; site elevations range from approximately 300 to 660 feet above mean sea level. The site is primarily vegetated with annual grassland vegetation and there are only a few trees in the site. Although the majority of the site is upland grassland, there are two small seasonal wetlands, a seasonal wetland swale, and a few ephemeral creeks in the site (see attached photographs).

There is a rock outcrop created by erosion over the years just southeast of the farm road entrance on Kirker Pass Road and some small patches of exposed bedrock on a south-facing hill in the north-central part of the site (see attached photographs). The outcrop near the road encompasses approximately 0.5 acres and contains a near-vertical face. The patches of exposed bedrock are in horizontal striations along the hillside and protrude through the surface of the hill in a few places. While there are a few pockets in the rock appearing as shallow caves from a distance, close inspection revealed that these 5+/- foot tall indentations are only a few feet deep. Therefore, the indentations are not suitable habitat for cave-dependent species such as some species of bats.

VEGETATION: California annual grassland series (Sawyer and Keeler-Wolf, 1995) best describes the dominant upland habitat type in the site. Grasses including oats (*Avena* sp.), soft chess brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), and perennial ryegrass (*Lolium perenne*) are dominant grass species on-site. Other grassland species such as yellow star-thistle (*Centaurea solstitialis*), purple star-thistle (*Centaurea calcitrapa*), rose clover (*Trifolium hirtum*), black mustard (*Brassica nigra*), fiddleneck (*Amsinckia menziesii*), black mustard (*Brassica nigra*), bull thistle (*Cirsium vulgare*), prickly lettuce (*Lactuca serriola*), and filaree (*Erodium botrys*) are intermixed with the grasses. Table 1 is a list of plant species observed in the site.

TABLE 1

PLANT SPECIES OBSERVED IN THE SITE

Aesculus californica	California buckeye
Amsinckia menziesii	fiddleneck
Avena fatua	oat
Brassica nigra	black mustard
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess brome
Carduus pycnocephalus	Italian thistle
Centaurea calcitrapa	purple star-thistle
Centaurea solstitialis	yellow star-thistle
Cirsium vulgare	bull thistle
Cynara cardunculus	artichoke thistle
Distichlis spicata	saltgrass
Eleocharis macrostachya	creeping spikerush
Eremocarpus setigerus	turkey mullein
Erodium botrys	filaree
Holocarpha virgata	tarweed
Hordeum marinum	Mediterranean barley
Hordeum murinum	foxtail barley
Juncus bufonius	toad rush
Lactuca serriola	prickly lettuce
Lolium perenne	perennial ryegrass
Quercus lobata	valley oak
Raphanus sativus	wild radish
Rumex crispus	curly dock
Trifolium hirtum	rose clover
Vicia sp.	vetch

Dominant vegetation in the on-site wetlands includes Mediterranean barley (*Hordeum marinum*), rabbit's foot grass (*Polypogon monspeliensis*), spikerush (*Eleocharis macrostachya*), toad rush (*Juncus bufonius*), saltgrass (*Distichlis spicata*), and perennial ryegrass.

The only trees in the site are some widely scattered valley oaks (*Quercus lobata*) and buckeye (*Aesculus californica*). No blue elderberry shrubs (*Sambucus mexicana*) were observed in or adjacent to the site.

WILDLIFE: A limited variety of wildlife species were observed in the site. Birds observed include turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), western scrub jay (*Aphelocoma coerulescens*) and Brewer's blackbird (*Euphagus cyanocephalus*). All of these species are common in agricultural and urban areas in the project vicinity.

No active bird nests were located during the biological surveys. The relatively larger trees in the site may be suitable for nesting raptors and the trees, shrubs, and grasslands in the site may be used for nesting by a variety of songbirds.

A variety of mammals common to agricultural and semi-rural areas are expected to use habitats in the site. A few California ground squirrels (*Spermophilus beecheyi*) and tracks of mule (black-tail) deer (*Odocoileus hemionus*) were observed in the site. Coyote (*Canis latrans*), black-tailed hare (*Lepus californicus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and Virginia opossum (*Didelphis virginiana*) are expected to occur in the area. A number of species of small rodents including Botta's pocket gopher (*Thomomys bottae*), mice (*Mus musculus, Reithrodontomys megalotis,* and *Peromyscus maniculatus*) and voles (*Microtus californicus*) also may occur. A number of bat species may fly over, forage, or roost in the on-site trees on occasion. However,

the site does not contain any caves that are required by many bat species for maternity roosts.

Western rattlesnake (*Crotalis viridis*) was the only reptile observed in the site; no amphibians were observed. Based on habitat types present and lack of year-round water throughout the site, a limited variety of amphibians and reptiles are expected to use on-site habitats. Although none was observed, the site and surrounding lands provide suitable habitat for species including Pacific chorus frog (*Pseudacris regilla*), western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), western toad (*Bufo boreas*), gopher snake (*Pituophis melanoleucus*), and common garter snake (*Thamnophis sirtalis*).

WATERS OF THE U.S. AND WETLANDS: Waters of the U.S., including wetlands, are broadly defined under 33 Code of Federal Regulations (CFR) 328 to include navigable waterways, many of their tributaries, and adjacent wetlands. State and federal agencies regulate these habitats and Section 404 of the Clean Water Act requires that a permit be secured prior to the discharge of dredged or fill materials into waters of the U.S. Both CDFW and ACOE have jurisdiction over modifications to riverbanks, lakes, stream channels and other wetland features.

Wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Jurisdictional wetlands are vegetated areas that meet specific vegetation, soil, and hydrologic criteria defined by the ACOE *Wetlands Delineation Manual* and Regional Supplement (ACOE, 1987; 2008). Waters of the U.S. are drainage features or water bodies as described in 33 CFR 328.4. Currently, ACOE and the U.S. Environmental Protection Agency (EPA) share authority to determine the jurisdictional status of waters of the U.S., including wetlands.

A preliminary delineation of potential waters of the U.S. and wetlands in the site was conducted on June 28 and September 29, 2010. Minor revisions to the

wetlands delineation were then made following 2011 and 2012 field visits with ACOE. Due to minor revisions in the locations of off-site components, a final wetland delineation field survey of the site was conducted on March 18, 2013.

A total of 0.468 acres of wetlands and creek channels were delineated in the project site (Moore Biological Consultants, 2013). This total includes 0.342 acres of jurisdictional Waters of the U.S., including wetlands and 0.126 acres of non-jurisdictional isolated wetlands and ephemeral creeks. A 0.340-acre seasonal wetland swale labeled "WS-1" on the attached wetland delineation map and a 0.002-acre section of ephemeral creek ("EC-1) have been verified as jurisdictional by ACOE. A 0.016-acre seasonal wetland ("SW-1"), 0.061-acre seasonal wetland ("Seep-1"), and three isolated ephemeral creeks ("IOW-1", "IOW-2" and "IOW-3"), together encompassing 0.049 acres fall outside ACOE jurisdiction.

A headwater ephemeral creek ("EC-1") originates in a shallow valley near the east edge of the site and conveys water under Kirker Pass Road in a culvert. The creek is dry except during and shortly after rain events. The average width of the jurisdictional channel as defined by a faint ordinary high water mark is approximately one foot. This ephemeral creek is tributary to Kirker Creek a few hundred feet east of the site.

There is a 0.34-acre seasonal wetland swale ("WS-1") in the southeast part of the site that is vegetated with rabbit's foot grass, Mediterranean barley, toad rush, and saltgrass. The seasonal wetland swale drains under Kirker Pass Road in a culvert is also tributary to Kirker Creek.

Kirker Creek flows generally north-northeast through Pittsburg and is tributary to Dowest Slough, which is in turn tributary to the San Joaquin River, which is a navigable water of the U.S. Due to their tributary relationships to the San Joaquin River, the headwater ephemeral creek and seasonal wetland swale are jurisdictional Waters of the U.S.

There is a 0.016-acre seasonal wetland ("SW-1") situated in an isolated basin in the east-central part of the site. Vegetation in the seasonal wetland includes Mediterranean barley, rabbit's foot grass, and perennial ryegrass. A second wetland ("Seep-1") is located a few hundred feet to the east within a topographically low area. This 0.061-acre wetland appears to be supported by an intermittent seep; the area supported dry brown grasses in the early summer of 2010 and then started seeping water and greening up in the late-summer. Vegetation in this wetland includes rabbit's foot grass, Mediterranean barley, spikerush, and perennial ryegrass. The 0.016-acre seasonal wetland in the site is located in a closed basin that is not tributary to the San Joaquin River or other jurisdictional waters of the U.S. Similarly, the 0.061-acre seasonal wetland fed by the intermittent seep is not contiguous with a creek that drains into jurisdictional waters of the U.S. Due to this hydrologic isolation, both seasonal wetlands fall outside ACOE jurisdiction.

During field visits in 2011 and 2012, ACOE staff requested the addition of three isolated ephemeral creeks ("IOW-1", "IOW-2" and "IOW-3") to the wetland delineation map. The average width of these channels as defined by faint ordinary high water marks is approximately one foot. None of these sections of isolated ephemeral are contiguous with a creek that drains into jurisdictional waters of the U.S. Due to this hydrologic isolation, these isolated ephemeral creeks fall outside ACOE jurisdiction.

No other potentially jurisdictional wetlands or Waters of the U.S. were observed in the site. No other areas were observed within or adjacent to the site appearing to have any potential to fall under ACOE jurisdiction.

Interestingly, there is a topographic valley in the site that is mapped on the USGS 7.5-minute Clayton topographic quadrangle (Figure 2) as an intermittent "blue-line" stream, draining from west to east. A short section of ephemeral creek that is a jurisdictional Water of the U.S. originates in the east (lowest) end of this valley. The western (highest) end of this valley contains one of the isolated

ephemeral creeks. The remainder of this topographic valley does not contain a creekbed with defined beds or banks, nor is there evidence of an ordinary high water mark, or any evidence of scour, sediment deposit, or surface flows. The central deepest part of this topographic valley lacks hydric soils and is uniformly vegetated with upland annual grassland and weeds (see attached photographs). The lower part of this topographic valley was historically filled, creating a generally flat area in the east-central part of the site. There is no evidence that this fill obstructs flows down the topographic valley; there is no debris stacked up at the west end of the fill and no evidence of any new channel being cut through the fill area.

Other small topographic valleys between hills in the site that drain even smaller watersheds similarly lack any indicators of waters of the U.S. or wetlands.

The findings of the 2013 wetland delineation are quite similar to those of a wetland delineation on the site conducted by Sycamore Associates in 1999 and verified by ACOE (File No. 24307S). The verification expired in 2004. Most notably, Sycamore mapped the seasonal wetland swale in the southeast corner of the site as 0.30 acres, while Moore Biological Consultants delineated 0.34 acres of wetland in this area. Sycamore located two freshwater seeps within topographic valleys in the central part of the site, but in different locations than the seep and seasonal wetland delineated by Moore Biological Consultants. The existence, locations, and extent of these intermittent seeps seems to vary over time as groundwater levels fluctuate. Similar on-again, off-again seeps supporting emergent wetlands downslope of the water source occur throughout parts of the coastal range and transitional Sierra foothills.

The other notable similarity in the two delineations is the fact that neither delineated the intermittent "blue-line" stream mapped on USGS maps as a continuous drainage feature through the site. Sycamore Associates mapped a few isolated segments in the bottom of this and other topographic valleys as "other waters", with most segments being mapped as being only one foot wide.

Moore Biological Consultants delineated a 100-foot long section of ephemeral creek in the east part of the topographic valley containing the "blue-line" stream as jurisdictional Waters of the U.S. and mapped an isolated ephemeral creek in the upper part of the valley.

SPECIAL-STATUS SPECIES: Special-status species are plants and animals that are legally protected under the state and/or federal Endangered Species Act or other regulations. The Federal Endangered Species Act (FESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal species. The California Endangered Species Act (CESA) of 1984 parallels the policies of FESA and pertains to native California species. Both FESA and CESA prohibit unauthorized "take" (i.e., killing) of listed species, with take broadly defined in both acts to include activities such as harassment, pursuit and possession.

Special-status wildlife species also includes species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat. The federal Migratory Bird Treaty Act and Fish and Game Code of California protect special-status bird species year-round, as well as their eggs and nests during the nesting season. Fish and Game Code of California also provides protection for mammals and fish.

Special-status plants include species which are designated rare, threatened, or endangered and candidate species for listing by the U.S. Fish and Wildlife Service (USFWS). Special-status plants also include species considered rare or endangered under the conditions of Section 15380 of the California Environmental Quality Act (CEQA) Guidelines, such as those plant species identified on Lists 1A, 1B and 2 in the Inventory of Rare and Endangered Vascular Plants of California by the California Native Plant Society (CNPS, 2010). Finally, special-status plants may include other species that are

considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included on List 3 in the CNPS Inventory.

Table 2 provides a summary of the listing status and habitat requirements of special-status plant and wildlife species that have been documented in the greater project vicinity or for which there is potentially suitable habitat within the site. This table also includes an assessment of the likelihood of occurrence of each of these species within the site. The evaluation of the potential for occurrence of each species is based on the distribution of regional occurrences (if any), habitat suitability, and field observations.

SPECIAL-STATUS PLANTS: Most of the special-status plants found in the greater project vicinity generally occur in relatively undisturbed areas within vegetation communities such as marshes and swamps, chaparral and areas with unique soils (e.g., serpentine, alkaline). None of these habitat types occur within the site. The on-site grassland is unremarkable and has been highly disturbed by grazing. Due to lack of suitable habitat, no special-status plant species are expected to occur in the site.

Special-status plants identified in the CNDDB (2013) query include large-flowered fiddleneck (*Amsinckia grandiflora)*, slender silver moss (*Anomobryum julaceum*), Mt. Diablo manzanita (*Arctostaphylos auriculata*), big tarplant (*Blepharizonia plumosa ssp. plumosa*), round-leaved filaree (*California macrophyllum*), Mt. Diablo fairy-lantern (*Calochortus pulchellus*), pink creamsacs (*Castilleja rubicundula ssp. rubicundula*), soft bird's-beak (*Cordylanthus mollis ssp. molllis*), Mount Diablo bird's-beak (*Cordylanthus nidularius*), Hospital Canyon larkspur (*Delphinium californicum ssp. interius*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), Diablo helianthella (*Helianthella castanea*), Brewers western flax (*Hesperolinon breweri)*, Delta tule pea (*Lathyrus jepsonii var. jepsonii*), Mason's lilaeopsis (*Lilaeopsis masonii*), showy golden madia (*Madia radiata*), Halls bush mallow (*Malacothamnus hallii*), woodland

TABLE 2

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
PLANTS						
Large-flowered fiddleneck	*Amsinckia grandiflora*	E	E	1B	Cismontane woodland, valley and foothill grassland.	Unlikely: the highly disturbed on-site grasslands do not provide suitable habitat for large-flowered fiddleneck; the site is also below the elevation range of this species (CNPS, 2010). The nearest occurrence of large-flowered fiddleneck in the CNDDB (2013) search area is approximately 1.5 miles southeast of the site.
Slender silver moss	*Anomobryum julaceum*	None	None	2	Damp rock and soil within broadleaved upland forest, north coast coniferous forest vegetation.	Unlikely: the highly disturbed on-site grasslands do not provide suitable habitat for slender silver moss. The nearest occurrence of this species in the CNDDB (2013) search area is approximately 2 miles south of the site.
Mt. Diablo manzanita	*Arctostaphylos auriculata*	None	None	1B	Chaparral, only on the Mt. Diablo area of Contra Costa County.	Unlikely: the highly disturbed on-site grasslands do not provide suitable habitat for Mt. Diablo manzanita and this evergreen shrub was not observed on- site. The nearest occurrence of this species in the CNDDB (2013) search area is approximately 2.5 miles southeast of the site.
Big tarplant	*Blepharizonia plumosa ssp. plumosa*	None	None	1B	Valley and foothill grassland.	Unlikely: the highly disturbed on-site grasslands do not provide suitable habitat for big tarplant and this showy species was not observed in the site. The site is mapped in the East Contra Costa County Habitat Conservation Plan (ECCCHCP; Jones & Stokes, 2006) as "Suitable Low Potential Habitat", in contrast to more likely areas of occurrence mapped as "Suitable Habitat". The nearest occurrence of big tarplant in the CNDDB (2013) search area is approximately 1 mile north of the site.

TABLE 2

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Round-leaved filaree	*California macrophyllum*	None	None	2	Cismontane woodland and valley and foothill grassland.	Unlikely: the site does not contain suitable habitat for this species and it was not observed in the site. The nearest occurrence of round-leaved filaree in the CNDDB (2013) search area is approximately 1 mile southwest of the site.
Mt. Diablo fairy-lantern	*Calochortus pulchellus*	None	None	1B	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland.	Unlikely: the highly disturbed on-site grasslands do not provide suitable habitat for Mt. Diablo fairy-lantern and this showy species was not observed in the site; the site is also below the elevation range of this species (Jones & Stokes, 2006). The nearest occurrence of Mt. Diablo fairy-lantern in the CNDDB (2013) search area is approximately 4.5 miles southwest of the site.
Pink creamsacs	*Castilleja rubicundula ssp. rubicundula*	None	None	1B	Serpentine soils within chaparral, cismontane woodland, riparian woodland, meadows and seeps, valley and foothill grassland vegetation	Unlikely: the highly disturbed on-site grasslands do not provide suitable habitat for this species. The nearest occurrence of pink creamsacs in the CNDDB (2013) search area is approximately 4.5 miles southwest of the site.
Soft bird's-beak	*Cordylanthus mollis ssp. molllis*	E	Rare	1B	Coastal salt marsh	Unlikely: the site does not contain suitable habitat for this species. The nearest occurrence of soft bird's-beak in the CNDDB (2013) search area is approximately 4 miles northwest of the site.
Mount Diablo bird's-beak	*Cordylanthus nidularius*	None	Rare	1B	Chaparral with serpentine soils	Unlikely: the site does not contain suitable habitat for Mount Diablo bird's-beak; the site is also below the elevation range of this species (CNPS, 2010). The nearest occurrence of Mount Diablo bird's-beak in the CNDDB (2013) search area is approximately 4 miles northwest of the site.

TABLE 2

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Hospital Canyon larkspur	*Delphinium californicum ssp. interius*	None	None	1B	Cismontane woodland, Chaparral	Unlikely: the site does not contain suitable habitat for Hospital Canyon larkspur; the site is also below the elevation range of this species (CNPS, 2010). The nearest occurrence of Hospital Canyon larkspur in the CNDDB (2013) search area is approximately 4 miles northwest of the site.
Diamond-petaled California poppy	*Eschscholzia rhombipetala*	None	None	1B	Valley and foothill grasslands, alkaline, clay slopes and flats.	Unlikely: the site does not provide suitable habitat for this species; no alkaline or clay soils were observed in the site. The nearest occurrence of diamond-petaled California poppy in the CNDDB (2013) search area is approximately 3 miles east of the site. The CNPS Inventory (2010) describes this species as extirpated in Contra Costa County.
Diablo helianthella	*Helianthella castanea*	None	None	1B	Broad-leaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland.	Unlikely: the on-site grasslands provide marginally suitable habitat for Diablo helianthella; the site is also below the elevation range of this species (Jones & Stokes, 2006). The nearest occurrence of Diablo helianthella in the CNDDB (2013) search area is approximately 2.5 miles south of the site.
Brewers western flax	*Hesperolinon breweri*	None	None	1B	Chaparral, cismontane woodland, valley and foothill grassland; usually serpentine soils.	Unlikely: the on-site grasslands do not provide suitable habitat for Brewers western flax and this showy species was not observed in the site. The site is not mapped as suitable habitat for this species (Jones & Stokes, 2006). The nearest occurrence of Diablo helianthella in the CNDDB (2013) search area is approximately 2.5 miles southeast of the site.
Delta tule pea	*Lathyrus jepsonii var. jepsonii*	None	None	1B	Marshes and swamps.	Unlikely: the site does not contain suitable habitat for this species. The nearest occurrence of Delta tule pea in the CNDDB (2013) search area is approximately 3.5 miles northeast of the site.

TABLE 2

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Mason's lilaeopsis	*Lilaeopsis masonii*	None	R	1B	Marshes, swamps and riparian scrub.	Unlikely: the site does not contain suitable habitat for this species. The nearest occurrence of Mason's lilaeopsis in the CNDDB (2013) search area is approximately 3 miles northeast of the site.
Showy golden madia	*Madia radiata*	None	None	1B	Cismontane woodland, valley and foothill grassland.	Unlikely: the site does not contain suitable habitat for showy golden madia; this species is also considered extirpated in Contra Costa County (CNPS, 2010). The nearest occurrence of showy golden madia in the CNDDB (2013) search area is approximately 1.5 miles southeast of the site.
Halls bush mallow	*Malacothamnus hallii*	None	None	1B	Chaparral	Unlikely: the site does not contain suitable habitat for this species. The nearest occurrence of Halls bush mallow in the CNDDB (2013) search area is approximately 1 mile southeast of the site.
Woodland woolythreads	*Monolopia gracilens*	None	None	1B	Mixed evergreen forest, redwood forest, Chaparral.	Unlikely: the site does not contain suitable habitat for this species. The nearest occurrence of woodland woolythreads in the CNDDB (2013) search area is approximately 4.5 miles south of the site.
Antioch dunes evening primrose	*Oenothera deltoides ssp. howellii*	E	E	1B	Interior dunes in the Delta region.	Unlikely: the site does not contain suitable habitat for this species. The nearest occurrence of Antioch dunes evening primrose in the CNDDB (2013) search area is approximately 3 miles north of the site.
Chaparral ragwort	*Senecio aphanactis*	None	None	2	Cismontane woodland, coastal scrub, within drying alkaline flats	Unlikely: the site does not contain suitable habitat for chaparral ragwort. The nearest occurrence of this species in the CNDDB (2013) search area is approximately 2 miles southeast of the site.
Suisun marsh aster	*Symphotrichum lentum*	None	None	1B	Marshes and swamps.	Unlikely: the site does not contain suitable habitat for this species. The nearest occurrence of Suisun marsh aster in the CNDDB (2013) search area is approximately 3.5 miles north of the site.

TABLE 2

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Caper-fruited tropidocarpum	*Tropidocarpum capparideum*	None	None	1B	Valley and foothill grassland, alkaline soils.	Unlikely: the site does not provide suitable habitat for this species; no alkaline or clay soils were observed in the site. The nearest occurrence of caper-fruited tropidocarpum in the CNDDB (2013) search area is approximately 2 miles southwest of the site.
WILDLIFE						
Birds						
Swainson's hawk	*Buteo swainsoni*	None	T	N/A	Breeds in stands of tall trees in open areas. Requires adjacent suitable foraging habitats such as grasslands or alfalfa fields supporting rodents.	Unlikely: there are a few potentially suitable nesting trees in the site and Swainson's hawks could use the on-site grasslands for foraging. However, the site is along the extreme west edge of the nesting range of this species. There are no documented occurrences of nesting Swainson's hawks in the CNDDB (2013) search area.
Burrowing owl	*Athene cunicularia*	None	SC	N/A	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	Unlikely: there are not too many ground squirrels or ground squirrel burrows within the site. No burrowing owls or evidence of occupancy were found in the site. The nearest occurrence of nesting burrowing owls in the CNDDB (2013) search area is approximately 2.5 miles west of the site.
California black rail	*Laterallus jamaicensis coturniculus*	None	T	N/A	Mainly inhabits salt marshes bordering larger bays	Unlikely: the site does not provide suitable habitat for this species. The nearest occurrence of California black rail in the CNDDB (2013) search area is approximately 3.5 miles north of the site.
California least tern	*Sturnula antillarum browni*	E	E	N/A	Estuaries and bays; nests on exposed tidal flats or beaches	Unlikely: the site does not provide suitable habitat for this species. The nearest occurrence of California least tern in the CNDDB (2013) search area is approximately 3 miles north of the site.

TABLE 2

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Suisun song sparrow	*Melospiza melodia maxillaris*	None	SC	N/A	Resident of brackish water marshes surrounding Suisun Bay. Inhabits cattails, tules, and tangles bordering sloughs	Unlikely: the site does not provide suitable habitat for Suisun song sparrow. The nearest occurrence of this species in the CNDDB (2013) search area is approximately 1.5 miles north of the site.
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	None	None	N/A	San Francisco Bay fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging	Unlikely: the site does not provide suitable habitat for saltmarsh common yellowthroat. The nearest occurrence of this species in the CNDDB (2013) search area is approximately 3.5 miles northeast of the site.
Mammals						
San Joaquin kit fox	*Vulpes macrotis mutica*	E	T	N/A	Inhabits open, dry grasslands and scrublands with loose textured soils.	Unlikely: the on-site grassland provide potentially suitable habitat for San Joaquin kit fox. However, the site is along the extreme north edge of the range of this species. The nearest occurrence of this species in the CNDDB (2013) search area is approximately 1.5 miles east of the site.
Pallid bat	*Antrozous pallidus*	None	SC	N/A	Open and dry habitats with rocky areas for roosting.	Moderate: Pallid bat and other species of bats may fly over, forage, or roost in the site on occasion. The nearest occurrence of this species in the CNDDB (2013) search area is approximately 4.5 miles west of the site.
Western red bat	*Lasiurus blossevillii*	None	SC	N/A	Roosts in trees in a wide variety of habitats between the coast western Sierra Nevada mountains.	Moderate: there is no suitable roosting habitat for western red bat in the site. This species may fly over, forage, or roost in the site on occasion. The nearest occurrence of western red bat in the CNDDB (2013) search area is approximately 4 miles east of the site
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	E	E	N/A	Saline emergent wetlands dominated by pickleweed	Unlikely: the site does not provide suitable habitat for salt-marsh harvest mouse. The nearest occurrence of this species in the CNDDB (2013) search area is approximately 3.5 miles north of the site.

TABLE 2

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Reptiles & Amphibians						
California red-legged frog	*Rana aurora draytonii*	T	SC	N/A	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	Unlikely: there is no suitable aquatic habitat for California red-legged frog in the project site. The nearest occurrence of this species in the CNDDB (2013) search area is a 2002 record in Kirker Creek, just east of the site. The site is not within designated critical habitat for California red-legged frog (USFWS, 2006).
Giant garter snake	*Thamnophis gigas*	T	T	N/A	Freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches, primarily for dispersal or migration.	Unlikely: the site does not provide suitable aquatic habitat for giant garter snake. There are no documented occurrences of this species in the CNDDB (2013) search area.
Western pond turtle	*Emys marmorata*	None	SC	N/A	Ponds, marshes, streams, and ditches with emergent aquatic vegetation and basking areas.	Unlikely: the site does not provide suitable aquatic habitat for western pond turtle. The nearest occurrence of this species in the CNDDB (2013) search area is approximately 3.5 miles northeast of the site.
California tiger salamander	*Ambystoma californiense*	T	T	N/A	Seasonal water bodies without fish (i.e., vernal pools and stock ponds) and grassland/ woodland habitats with summer refugia (i.e., burrows).	Unlikely: There is no suitable breeding habitat within or near the site for California tiger salamander. The nearest occurrence of California tiger salamander in the CNDDB (2013) search area is a 2000 record in a pond at Keller Landfill, approximately 0.5 miles northwest of the site. The site is not within designated critical habitat for California tiger salamander (USFWS, 2005a).
Alameda whipsnake	*Masticophis lateralis euryxanthus*	T	T	N/A	Scrub, chaparral, grassland, and woodland habitat mosaics. South-facing slopes and ravines.	Unlikely: the site does not provide suitable habitat for Alameda whipsnake. The nearest occurrence of this species in the CNDDB (2013) search area is approximately 3.5 miles northeast of the site.

TABLE 2

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Silvery legless lizard	*Anniella pulchra pulchra*	None	SC	N/A	Sandy or loose loamy soils under sparse vegetation.	Unlikely: the site does not provide suitable habitat for silvery legless lizard The nearest occurrence of this species in the CNDDB (2013) search area is approximately 4 miles east of the site.
Invertebrates						
Vernal pool fairy shrimp	*Branchinecta lynchi*	T	None	N/A	Vernal pools	Unlikely: the 0.016-acre seasonal wetland is the only potentially suitable for vernal pool fairy shrimp, but is much smaller and shallower than most pools that support this species. The other wetlands in the site do not pond water and are entirely unsuitable for this species. There are no documented occurrences of vernal pool fairy shrimp in the CNDDB (2013) search area. The site is not within designated critical habitat for vernal pool fairy shrimp or other listed branchiopods (USFWS 2005b).
Vernal pool tadpole shrimp	*Lepidurus packardi*	E	None	N/A	Vernal pools	Unlikely: the 0.016-acre seasonal wetland is too small and shallow to support vernal pool tadpole shrimp. The other wetlands in the site do not pond water and are entirely unsuitable for this species. There are no documented occurrences of vernal pool tadpole shrimp in the CNDDB (2013) search area.

1 T= Threatened; E = Endangered.

2 T = Threatened; E = Endangered; R = Rare; SC=State of California Species of Special Concern

3 CNPS List 1B includes species that are rare, threatened, or endangered in California and elsewhere; List 2 includes plants that are rare, threatened or endangered in California but are more common elsewhere.

woolythreads (*Monolopia gracilens*), Antioch dunes evening primrose (*Oenothera deltoides ssp. howellii*), chaparral ragwort (*Senecio aphanactis*), Suisun marsh aster (*Symphotrichum lentum*), and caper-fruited tropidocarpum (*Tropidocarpum capparideum*) (Table 2). Additionally, although not recorded in the CNDDB (2013) within the search area, the East Contra Costa County Habitat Conservation Plan (ECCCHCP; Jones & Stokes, 2006) also identifies alkali milkvetch (*Astragalus tener* ssp. *tener*), Contra Costa goldfields (*Lasthenia conjugens*), Mount Diablo buckwheat (*Eriogonum truncatum*), and adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*) as species requiring evaluation in annual grassland and seasonal wetland habitats in the greater project vicinity.

The site is annual grassland, with one small seasonal wetland, one small emergent wetland, a seasonal wetland swale, and a few sections of ephemeral creek. The site has been heavily grazed and on-site grasslands are moderately to highly disturbed. The site was systematically searched by driving and walking throughout the site. No special-status plants were observed or are expected to occur in the project site. Each of the plant species identified in the ECCCHCP (Jones & Stokes, 2006) as potentially occurring in annual grassland and seasonal wetland habitats is discussed below.

Alkali Milkvetch: The California Native Plant Society (CNPS) on-line *Inventory of Rare and Endangered Plants* (2010) describes alkali milkvetch as occurring in annual grasslands in adobe clay soils, and alkaline vernal pools, at elevations between 0 and 60 meters above sea level. There is no suitable habitat in the site for this species. The site is also above the elevation range of this species, and the CNPS Inventory describes this species as extirpated (i.e., no longer existent) in Contra Costa County.

Big Tarplant: The CNPS Inventory describes big tarplant as occurring in annual grassland habitats at elevations between 30 and 505 meters above sea level. The site is mapped in the ECCCHCP as "Suitable Low Potential Habitat", in

contrast to more likely areas of occurrence mapped as "Suitable Habitat". This showy plant was not observed in the site.

Brewer's Dwarf Flax: The CNPS Inventory describes Brewer's dwarf flax as occurring in annual grasslands, usually in serpentinite soils, at elevations between 90 and 900 meters above sea level. The site is not mapped in the ECCCHCP as "Suitable Habitat" for Brewer's dwarf flax. This plant was not observed in the site.

Contra Costa Goldfields: The CNPS Inventory describes Contra Costa goldfields as occurring in annual grassland habitats and vernal pools at elevations between 0 and 470 meters above sea level. There are no vernal pools in the site. This showy plant was not observed in the annual grassland habitats in the site.

Diamond-petaled Poppy: The CNPS Inventory describes diamond-petaled poppy as occurring in annual grassland habitats with alkaline or clay soils, at elevations between 0 and 975 meters above sea level. No areas of alkaline or clay soils were observed in the site. The CNPS Inventory describes this species as extirpated in Contra Costa County.

Large-flowered Fiddleneck: The CNPS Inventory describes large-flowered fiddleneck as occurring in annual grassland habitats at elevations between 275 and 550 meters above sea level. The site is below the elevation range of this species. This plant was not observed in the site.

Mount Diablo Buckwheat: The CNPS Inventory describes Mount Diablo buckwheat as occurring in annual grassland habitats with sandy soils, at elevations between 3 and 350 meters above sea level. No areas of sandy soils were observed in the site. This plant was not observed in the site.

Mount Diablo Fairy-lantern: The CNPS Inventory describes Mount Diablo fairy-lantern as occurring in annual grassland habitats with sandy soils, at elevations between 30 and 840 meters above sea level. In contrast, the ECCCHCP describes this species as occurring at elevations between 650 and 2,600 feet above sea level. Either way, the site is at the low end or below the elevation range of the species. This showy plant was not observed in the annual grassland habitats on-site.

Round-leaved Filaree: The CNPS Inventory describes round-leaved filaree as occurring in annual grassland habitats with clay soils, at elevations between 15 and 1,200 meters above sea level. While this species blooms from March through May, it should have been detectable in mid-June 2010, if present, due to the extended spring rains which delayed the blooming periods of most Central Valley annuals. Round-leaved filaree was not observed in the annual grassland habitats on-site.

Showy Madia: The CNPS Inventory describes showy madia as occurring in annual grassland habitats at elevations between 25 and 900 meters above sea level. While this species blooms from March through May, it should have also been detectable in mid-June 2010, if present, due to the extended spring rains which delayed the blooming periods of most Central Valley annuals. Showy madia was not observed in the annual grassland habitats on-site. Further, the CNPS Inventory describes this species as extirpated in Contra Costa County, and there are no known records of showy madia in the ECCCHCP planning area.

Adobe Navarretia: The CNPS Inventory describes adobe navarretia as occurring in mesic (i.e., wet) areas within annual grassland habitats and vernal pools, at elevations between 100 and 1,000 meters above sea level. There are no vernal pools in the site and no mesic areas were observed in the annual grassland habitats in the site. This plant was not observed in the site.

SPECIAL-STATUS WILDLIFE: Special-status wildlife species recorded in project area in the CNDDB (2013) search area include burrowing owl, California black rail (*Laterallus jamaicensis coturniculus*), California least tern (*Sturnula antillarum browni)*, Suisun song sparrow (*Melospiza melodia maxillaris*), Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), San Joaquin kit fox (*Vulpes macrotis mutica*), pallid bat (*Antrozous pallidus*), western red bat (*Lasiurus blossevillii*), salt-marsh harvest mouse (*Reithrodontomys raviventris*), California red-legged frog (*Rana auroura draytonii*), western pond turtle (*Actinemys marmorata*), California tiger salamander (*Ambystoma californiense*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), and silvery legless lizard (*Anniella pulchra pulchra*). Additionally, although not recorded in the CNDDB (2013 within the search area, the East Contra Costa County Habitat Conservation Plan (ECCCHCP; Jones & Stokes, 2006) also identifies Swainson's hawk, giant garter snake (*Thamnophis gigas*), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*) as species requiring evaluation in annual grassland and seasonal wetland habitats in the greater project vicinity.

The site is annual grassland, with one small seasonal wetland, one small emergent wetland, a seasonal wetland swale, and a few sections of ephemeral creek. The site has been heavily grazed and on-site grasslands are moderately to highly disturbed. The site was systematically searched by driving and walking throughout the site. No special-status wildlife species were observed or are expected to occur in the project site on more than a very occasional or transitory basis. Each of the wildlife species identified in the ECCCHCP (Jones & Stokes, 2006) as potentially occurring in annual grassland and seasonal wetland habitats is discussed below.

Swainson's Hawk: The Swainson's hawk is a migratory hawk listed by the State of California as a Threatened species. The Migratory Bird Treaty Act and Fish and Game Code of California protect Swainson's hawks year-round, as well as their nests during the nesting season (March 1 through September 15).

Swainson's hawk are found in the Central Valley primarily during their breeding season, a population is known to winter in the San Joaquin Valley.

Swainson's hawks prefer nesting sites that provide sweeping views of nearby foraging grounds consisting of grasslands, irrigated pasture, hay, and wheat crops. Most Swainson's hawks are migratory, wintering in Mexico and breeding in California and elsewhere in the western United States. This raptor generally arrives in the Central Valley in mid-March, and begins courtship and nest construction immediately upon arrival at the breeding sites. The young fledge in early July, and most Swainson's hawks leave their nest territories by late August.

No Swainson's hawks were observed during the field surveys. The larger trees within the site are suitable for nesting Swainson's hawks. Swainson's hawks are not documented in the CNDDB (2013) nesting within five miles of the site and the site is along the extreme west edge of the nesting range of this species. It is considered unlikely that Swainson's hawks will nest on-site in future years.

BURROWING OWL: The Migratory Bird Treaty Act and Fish and Game Code of California protect burrowing owls year-round, as well as their nests during the nesting season (February 1 through August 31). Burrowing owls are a year-long resident in a variety of grasslands as well as scrub lands that have a low density of trees and shrubs with low growing vegetation; burrowing owls that nest in the Central Valley may winter elsewhere.

The primary habitat requirement of the burrowing owl is small mammal burrows for nesting. The owl usually nests in abandoned ground squirrel burrows, although they have been known to dig their own burrows in softer soils. In urban areas, burrowing owls often utilize artificial burrows including pipes, culverts, and piles of concrete pieces. This semi-colonial owl breeds from March through August, and is most active while hunting during dawn and dusk. The nearest documented occurrence of burrowing owl is located approximately 2.5 miles west

of the site (CNDDB, 2013). The CNDDB also contains numerous occurrences of burrowing owls throughout search area.

No burrowing owls were observed during the field surveys. A small number of ground squirrel burrows were observed on-site; however, none of these burrows showed any evidence of current or past occupancy by burrowing owls (i.e., whitewash, pellets, feathers). Based on the presence of potentially suitable habitat in the site and distribution of burrowing owls in the project vicinity, it is possible owls could move on-site in the future.

San Joaquin Kit Fox: The project site is located just north of the perceived range of the federally endangered and State of California threatened San Joaquin kit fox (CNDDB, 2013). This species dens in subterranean burrows and forages primarily for small mammals and insects in annual grasslands, pasturelands, cultivated fields, and along the edges of orchards.

No San Joaquin kit fox were observed in or adjacent to the site during the field surveys. No on-site burrows showed signs of kit fox occupancy. While kit fox may have migrated through or foraged in the site in the past, it is considered a remote possibility that this species uses burrows in the site for denning, due to a lack of sign and location of the site at the outer edge of the currently published species range. It is also considered highly unlikely that migrating or wandering kit foxes ever use these burrows for occasional cover due to a lack of kit fox sightings in this area during fairly intensive survey efforts during the past decade. However, since kit fox have been known to occasionally wander several miles outside of the published species range, future use of the site by kit fox is possible.

Vernal Pool Invertebrates: In 1994, the USFWS listed three species of Central Valley fairy shrimp and one species of tadpole shrimp as threatened or endangered species under the Federal Endangered Species Act. Vernal pool fairy shrimp was listed as threatened, while Conservancy fairy shrimp

(*Branchinecta conservatio*), longhorn fairy shrimp (*B. longiantenna*), and vernal pool tadpole shrimp were listed as endangered. All of these species occur in vernal pools and other seasonal wetland habitats throughout much of the Central Valley. Each year, shrimp eggs that lay on the floor of the dry wetlands during the summer hatch after the onset of cold winter rains. The shrimp grow for a few weeks to a couple months, and then lay eggs and die.

There are no recorded occurrences of vernal pool fairy shrimp, vernal pool tadpole shrimp, or other listed branchiopods in the CNDDB (2013) search area. The site is not within an area designated by USFWS as critical habitat for vernal pool species (USFWS, 2005a).

The 0.016-acre seasonal wetland in the central part of the site is the only area in the site providing potentially suitable habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp. Due to the small size and shallow nature of this wetland, it is unlikely top support listed vernal pool branchiopods.

Conclusions and Recommendations

- The site consists of disturbed annual grassland, a seasonal wetland, and emergent wetland, a seasonal wetland swale, and a few sections of ephemeral creek. Most of the on-site habitats are biologically unremarkable.

- The only areas in the site that fall under ACOE jurisdiction are a 0.340-acre seasonal wetland swale and a 0.002-acre section of ephemeral creek that are tributary to Kirker Creek. The seasonal wetland swale is in an open space area that will not be impacted by the proposed project. The section of ephemeral creek will be filled, triggering a need for permits from ACOE, CDFW, and the California Regional Water Quality Control Board.

- Due to lack of suitable habitat, the likelihood of occurrence of listed, candidate, and other special-status plants within the site is low. Burrowing owls and Swainson's hawks were not observed on-site. San Joaquin kit fox are not currently utilizing the project site for denning and it is considered highly unlikely that kit foxes will occupy the project site or adjacent areas in the future. The 0.016-acre seasonal wetland in the central part of the site provides very marginal habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp.

- Development of the project site will result in a loss of potential habitat for burrowing owl, Swainson's hawk, San Joaquin kit fox, vernal pool fairy shrimp, and vernal pool tadpole shrimp. Mitigation for conversion of natural land to development is proposed through participation in the ECCCHCP. Participation in the ECCCHCP involves payment of fees and implementation of avoidance and minimization measures, including focused pre-construction surveys for burrowing owl, Swainson's hawk, and San Joaquin kit fox.

- Trees, shrubs, and grasslands in the site could be used by birds protected by the Migratory Bird Treaty Act of 1918. Vegetation clearing should be scheduled outside of the avian nesting season (February 1 through August 31) or a survey should be conducted immediately prior to vegetation removal. If active nests are found, vegetation removal should be delayed until the young fledge.

Thank you for contracting with Moore Biological Consultants to conduct this survey. Please call me at (209) 745-1159 with any questions.

Sincerely,

Diane S. Moore, M.S.
Principal Biologist

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Photographs

Steep hills with scattered trees near the farm road entrance, looking southwest; 07/09/10.

Seasonal wetland (0.016 ac.) in the east-central part of the site, looking southwest; 06/28/10.

Farm road entrance and adjacent rock outcrop, looking southeast from the hills in the north-central part of the site; 07/19/10.

Exposed bedrock in the north-central part of the site. There are a few pockets in the bedrock that are a few feet deep, but they are too small and shallow to qualify as caves; looking northwest; 07/19/10.

Seasonal wetland swale (0.340 acres) that is tributary to Kirker Creek, looking south; 06/28/10.

Box culvert under Kirker Pass Road at the north tip of the wetland swale, looking northeast; 06/28/10.

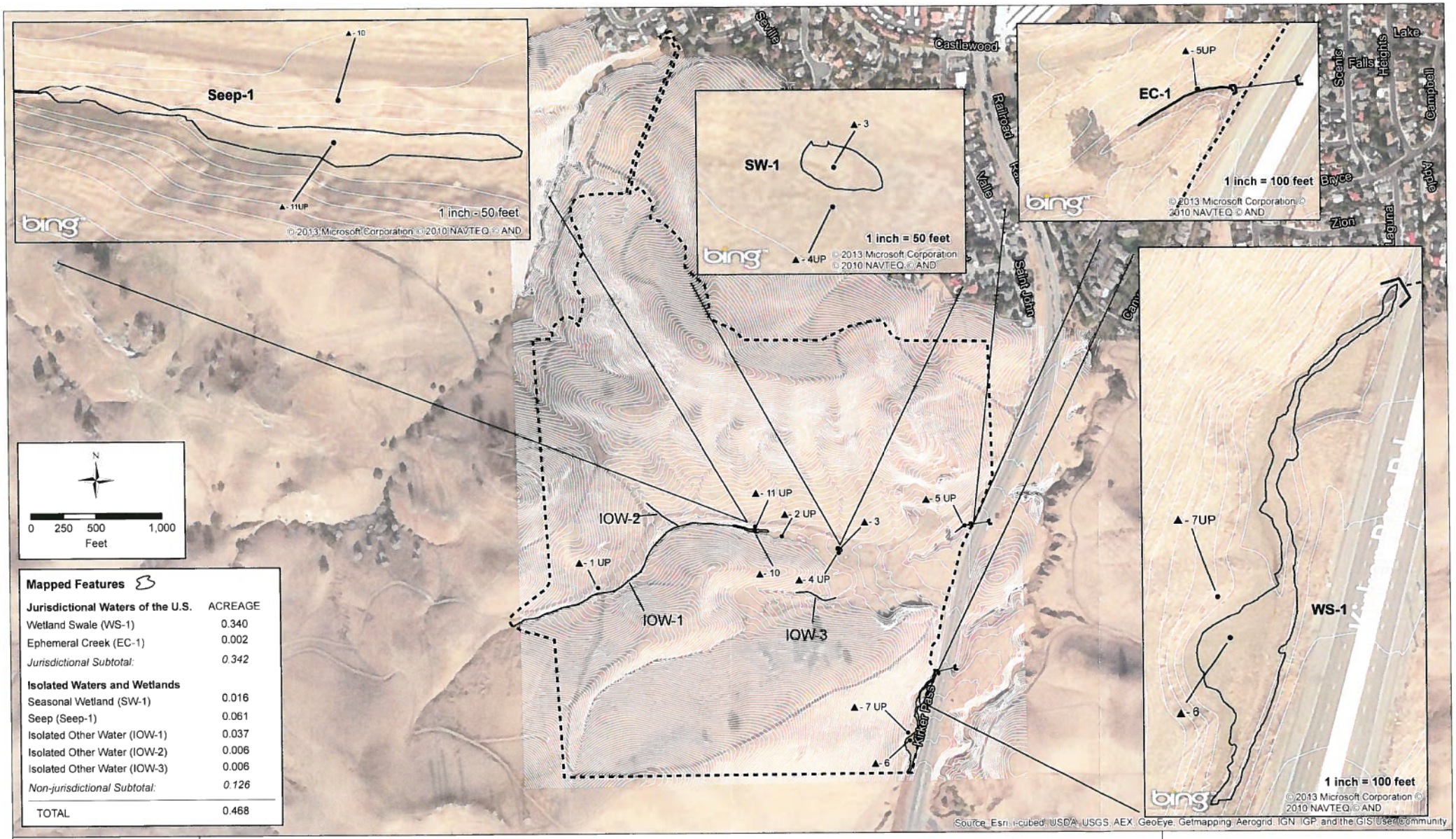
Emergent wetland (0.061 acres) fed by an intermittent seep, looking west; 09/29/10.

Upland grassland where an off-site detention basin will be constructed, looking northeast; 09/29/10.

Cirsium vulgare and *Bromus hordeaceus* at upland data point 1, looking southwest; 06/28/10.

Mixture of upland grasses and weeds at upland data point 2, looking west; 06/28/10.

Wetland Delineation Map



Mapped Features

Jurisdictional Waters of the U.S.	ACREAGE
Wetland Swale (WS-1)	0.340
Ephemeral Creek (EC-1)	0.002
Jurisdictional Subtotal:	*0.342*
Isolated Waters and Wetlands	
Seasonal Wetland (SW-1)	0.016
Seep (Seep-1)	0.061
Isolated Other Water (IOW-1)	0.037
Isolated Other Water (IOW-2)	0.006
Isolated Other Water (IOW-3)	0.006
Non-jurisdictional Subtotal:	*0.126*
TOTAL	0.468

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Data Disclaimer:
The delineation has been done in accordance with the 1987 Wetlands Delineation Manual, US Army Corps of Engineers and the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. The boundaries and jurisdictional status of all waters shown on this map are preliminary and subject to verification by the U.S. Army Corps of Engineers.

Verified by: Katarina Galacatos & Cameron Johnson, USACE San Francisco
Dates of Field Verification: 11/01/11 & 06/05/12
Source Data: Discovery Builders, Moore Biological Consultants.
Aerial Photo: ESRI, 2010.

Study Area (±165 acres)
▲- 1 3-Parameter Data Point
Culvert

Wetland Delineation Map
Montreux Project
Contra Costa County, CA
Map Date: March 2013