

Appendix D

Biological Site Assessment

Biological Site Assessment for Groundwater Production Well, Meridian Farms Water Company

PREPARED FOR: Meridian Farms Water Company

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DATE: August 1, 2011

Introduction

This technical memorandum identifies potential biological constraints/issues associated with the proposed construction of a groundwater production well as part of Meridian Farms Water Company's (MFWC) 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 California Natural Diversity Database (CNDDDB) search results; CNDDDB, California Native Plant Society (CNPS), and U.S. Fish and Wildlife (USFWS) species lists; and historical documents for the area.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 well site.

Project Summary

MFWC proposes to install one new groundwater production well near an existing cement-lined irrigation canal. Figure 1 shows the general location of the proposed well. Figure 2 shows the biological survey area for the MFWC production well.

The MFWC well would be within a 0.5-acre area in Sutter County, California (Township 15 North, Range 01 East, 121° 53' 25.22" West longitude, 39° 8' 43.38" North latitude in the U.S. Geological Survey [USGS] Meridian 7.5-minute quadrangle), approximately 1 mile east of the town of Meridian, north of State Highway 20, adjacent to a concrete-lined canal.

Survey Methods

The site survey was conducted on April 18, 2011, between 3:00 p.m. and 4:30 p.m., by CH2M HILL biologist Victor Leighton, with an escort from MFWC. Air temperatures were between 65 and 70 degrees Fahrenheit, with overcast skies and negligible wind speeds. The site was 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 survey are provided in Attachment 1. The CNDDDB search

results (Figure 2) and the CNDDDB, USFWS, and CNPS species lists are provided in Attachment 2.

Survey Results

Flora

The well location is in a highly disturbed agricultural area within a powerline and cement-lined irrigation canal corridor, as shown in Attachment 1, Photographs 1 and 2. The predominant vegetation type observed 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 filaree (*Erodium cicutarium*), and perennial pepperweed (*Lepidium latifolium*), which were recently mowed. Attachment 3 (Table 3-1) lists the plant species observed within the project area.

Fauna

Fauna species observed at the well site and adjacent habitats included the following: western scrub jay (*Aphelocoma californica*), red-winged blackbird (*Agelaius phoeniceus*), western kingbird (*Tyrannus verticalis*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), Turkey vulture (*Cathartes aura*), European starling (*Sturnus vulgaris*), and pocket gopher (*Thomomys* sp.). Attachment 3 (Table 3-2) lists the wildlife species observed within the project areas.

Sensitive Habitats

The MFWC well site is not within or near any sensitive habitats.

Rare Plants

Rare plants with the potential to occur within the project area were identified using the CNDDDB and CNPS databases and are listed in Attachment 2. Nine plant species were identified on the Meridian, Grimes, Sutter Buttes, and Tisdale Weir USGS 7.5-minute quadrangles. Eight of the plant species are not likely to occur within the project area because suitable habitat is not present. The well site is adjacent to an active orchard and is routinely maintained through mechanical means such as mowing, agricultural cultivation, and 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 project area. 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.

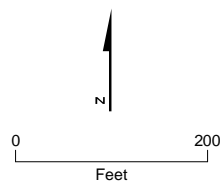
Fishery Resources

No waterways that support fishery resources are located within the MFWC project area.



LEGEND

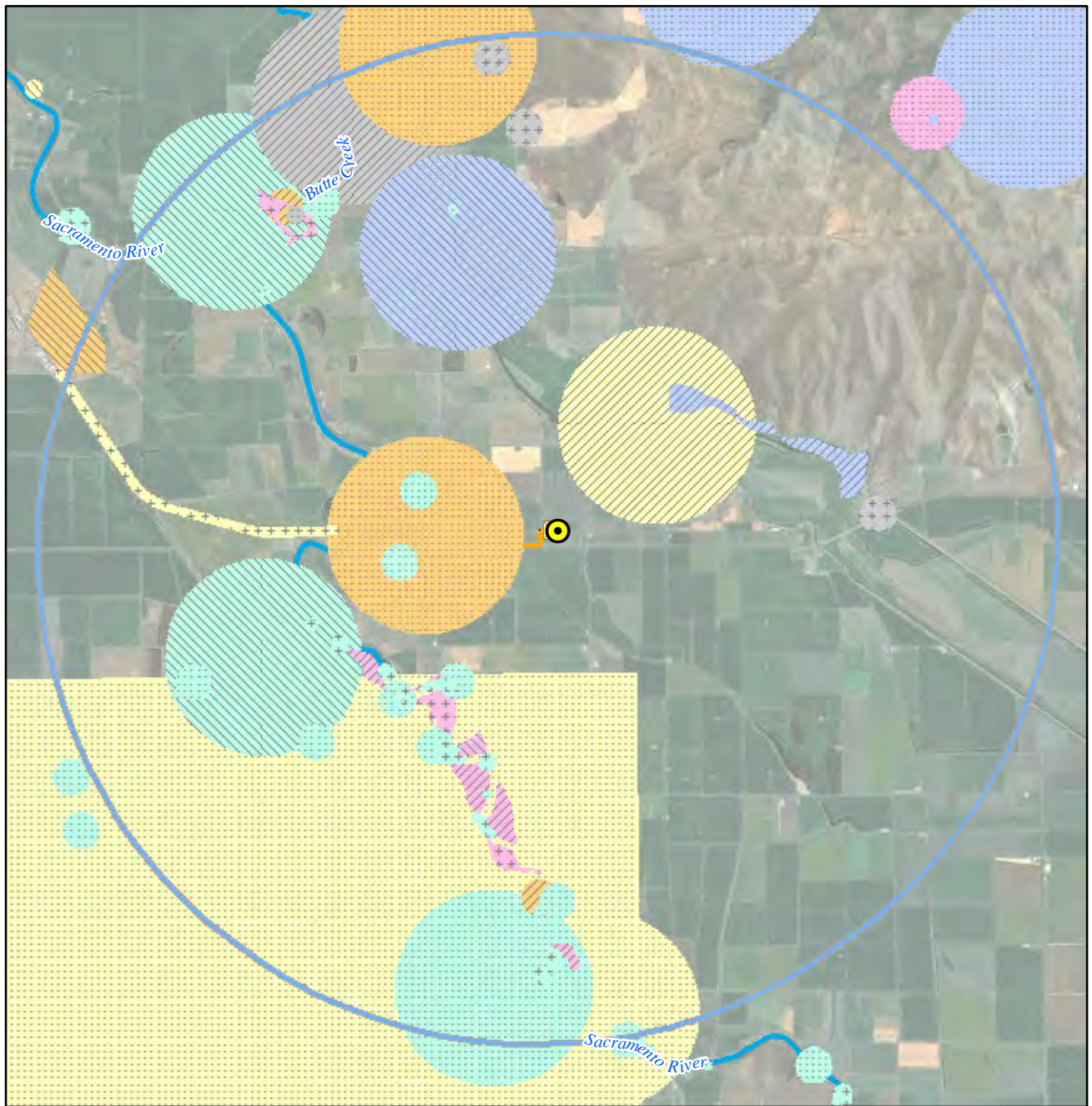
- WELL LOCATION
- PROPOSED POWER POLE
- EXISTING POWER POLE
- ACCESS ROUTE
- PRIVATE ACCESS ROUTE
- PROPOSED CONVEYANCE LINE
- PROPOSED POWER LINE
- PROJECT AREA



VICINITY MAP

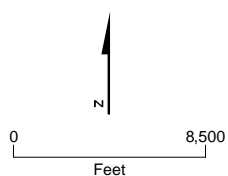


FIGURE 1
MFWC PROPOSED WELL LOCATION
 PROPOSITION 50 GROUNDWATER WELL PRODUCTION
 ELEMENT



LEGEND

- WELL LOCATION
- PROPOSED POWER POLE
- EXISTING POWER POLE
- ACCESS ROUTE
- PRIVATE ACCESS ROUTE
- PROPOSED CONVEYANCE LINE
- PROPOSED POWER LINE
- PROJECT AREA
- 5-MILE BUFFER



CALIFORNIA NATURAL DIVERSITY DATABASE

- Colusa layia
- Great Valley Cottonwood Riparian Forest
- Great Valley Mixed Riparian Forest
- Great Valley Willow Scrub
- Marysville California kangaroo rat
- Northern Hardpan Vernal Pool
- San Francisco campion
- San Joaquin pocket mouse
- Swainson's hawk
- Yuma myotis
- bank swallow
- cackling (=Aleutian Canada) goose

- giant garter snake
- greater sandhill crane
- heartscale
- hoary bat
- tricolored blackbird
- valley elderberry longhorn beetle
- vernal pool fairy shrimp
- vernal pool tadpole shrimp
- western red bat
- western yellow-billed cuckoo
- woolly rose-mallow

FIGURE 2
MFWC BIOLOGICAL RESOURCES

PROPOSITION 50 GROUNDWATER WELL PRODUCTION ELEMENT

Raptors and Migratory Birds

The well site was inspected for raptors and migratory birds and suitable nesting habitat. An active red-tail hawk nest was observed approximately 1,400 feet directly west of the proposed well site. The well site has 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.

Roosting Bats

No structures or other suitable features were in the vicinity that would provide roosting sites for bat species.

Giant Garter Snakes

No wetland habitat or canals that would support giant garter snakes are within or near the proposed project site.

Conclusion and Recommendations

The project footprint would not affect wetlands, potential waters of the United States, or waters of the State of California. Consultation with USFWS or California Department of Fish and Game (CDFG) is not needed because of the lack of potential habitat for special-status species and, thus, no potential to affect any special-status species. The following measures are recommended to avoid impacts on known migratory bird species potentially occurring within the project area:

- 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 any nesting birds within or adjacent to the proposed well location. 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 for all nesting bird species. Surveys specifically for nesting Swainson's hawk should be conducted within 0.5 mile of designated disturbance areas that contain appropriate nesting habitat.
- If active Swainson's hawk nests are detected during the survey, a no-disturbance buffer zone of 0.5 mile is required. For other nesting birds, protected areas surrounding nests, the size of which is to be determined by the qualified biologist or in consultation with CDFG for certain species (i.e., Swainson's hawk), should be established and a nest monitoring plan developed for all active nests.
- Consultation with CDFG should be conducted for any construction that would occur 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 (CDFG). California Natural Diversity Database (CNDDDB). 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.
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- Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Sacramento, CA. Nongame-Heritage Program, California Department of Fish and Game.
- Jepson Interchange. 2008. *Jepson Flora Project Online Interchange for California Floristics*. University of California, Berkley. Available at: <http://ucjeps.berkeley.edu/interchange.html>.
- 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.

Attachment 1
Site Photographs

**PHOTOGRAPH 1**

MFWC Well Location – View west at proposed well site, irrigation/drainage ditch on left side of photograph with English walnut orchards adjacent to well site.

**PHOTOGRAPH 2**

MFWC Well Location – View east from Farmlan Road towards well site.

**PHOTOGRAPH 3**

MFWC Well Location – View west along irrigation drainage canal. Farmlan Road in foreground, tree in distance under powerlines shows red-tail nest location (arrow depicts nest location).

Attachment 2
CNDDB, CNPS, and USFWS Species Lists

TABLE 2-1

Special-status Plant and Animal Species Reported near the MFWC Well Project Area
MFWC 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					
<i>Agelaius tricolor</i>	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 – no suitable habitat.
<i>Buteo swainsoni</i>	Swainson's hawk	--/ST/--	Riparian areas adjacent to grasslands and other areas with suitable trees for nesting and foraging habitat including agricultural lands.	March to September	Moderate – suitable nesting and forage habitat within 0.5 mile of well site.
<i>Coccyzus americanus occidentalis</i>	western yellow-billed cuckoo (nesting)	FC/SE/--	Riparian woodlands composed of dense cottonwoods and willows.	June to September	Highly unlikely – no suitable nesting habitat or foraging habitat is in the immediate project vicinity.
<i>Grus canadensis tabida</i>	greater sandhill crane	--/ST/--	Nest in wetlands and shallow marshes. Sandhill cranes feed in mudflats around reservoirs, moist meadows, and agricultural areas. During migration and winter, sandhill cranes regularly feed in dry fields, returning to water at night.	February to August	Highly unlikely – no suitable nesting habitat or foraging habitat is in the immediate project vicinity.
<i>Riparia riparia</i>	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 MFWC project area.
<i>Spinus lawrencei</i>	Lawrence's goldfinch	--/--/--	Endemic to arid woodlands in the foothills of California and northern Baja California.	February to July	Low – suitable foraging habitat present, low-quality nesting opportunities present.

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Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area
Mammals					
<i>Antrozous pallidus</i>	pallid bat	--/CSC	Grasslands, shrublands, woodlands, and forests from sea level up through mixed conifers. Rocky areas with caves or tunnels. Occasionally inhabit old buildings.	October to February	Low – no suitable habitat present for roosting.
<i>Dipodomys californicus eximius</i>	Marysville California kangaroo rat	--/CSC/--	Live in chaparral areas that provide soil soft enough to allow them to dig burrows. In places where the soil is harder, they are often found occupying old burrows of other rodents, usually ground squirrels.	Breeds several times throughout the year	Low – no suitable habitat present.
<i>Lasiurus blossevillii</i>	western red bat	--/CSC/--	Broad-leafed woodlands, usually in riparian areas. Primarily found at mid-elevations; in Arizona known from 2,400 to 7,200 feet.	March to June	Low – no suitable habitat present for roosting.
<i>Lasiurus cinereus</i>	hoary bat	--/--/--	Generally roosts in dense foliage of medium to large trees. Prefers open habitats or habitat mosaics with access to trees for cover and open areas or habitat edges for foraging.	Mid-May through early July	Moderate – habitat present, no trees would be removed.
<i>Myotis yumanensis</i>	Yuma myotis	--/--/--	Day roosts are found in cavities in buildings, trees, mines, caves, bridges, and rock crevices. Night roosts are usually associated with buildings, bridges, and other open humanmade structures.	May to September	Low – no suitable habitat present for roosting.
<i>Perognathus inornatus inornatus</i>	San Joaquin pocket mouse	--/--/--	Occurs in open grassland and desert-shrub communities on alluvial sandy and wind-drifted sands.	March to July	Low – poor-quality habitat present for this species.

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Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area
Amphibians and Reptiles					
<i>Ambystoma californiense</i>	California tiger salamander	FT/CSC/CE	Annual grasslands and grassy understory of valle -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 area.
<i>Rana draytonii</i>	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	Highly unlikely – no suitable habitat in the project area.
<i>Thamnophis gigas</i>	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	Highly unlikely – No suitable habitat present for this species.
Invertebrates					
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	FT/--/--	Found in vernal pools (seasonal wetlands).	October to May	Highly unlikely – no suitable habitat in the project area.
<i>Branchinecta conservatio</i>	conservancy fairy shrimp	FE/--/--	Occurs in large, generally playa-like vernal pools with highly turbid water.	October to May	Highly unlikely – no suitable habitat in the project area.

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Special-status Plant and Animal Species Reported near the MFWC Well Project Area
MFWC Groundwater Production Element Project

Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area
<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	FT/--/--	Host plant elderberry (<i>Sambucus mexicana</i>). Generally found in riparian stands of clustered host plant.	April to June	Highly unlikely – no suitable host plant in the project area.
<i>Lepidurus packardii</i>	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 area.
Fish					
<i>Acipenser medirostris</i>	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 cobble substrates that 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.	Adults typically migrate into fresh water beginning in late February; spawning occurs from March to July, with peak activity from April to June	Highly unlikely – no suitable habitat in the project area.
<i>Hypomesus transpacificus</i>	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.

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<i>Oncorhynchus mykiss</i>	Central Valley steelhead	FT/--/--	Found in tributaries to the San Francisco Bay, including the South Bay. Passes 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 area.
<i>Oncorhynchus tshawytscha</i>	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 area.
<i>Oncorhynchus tshawytscha</i>	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 outmigration to the ocean. Spawns in well-oxygenated water in swift, shallow riffles, or at edges of fast runs with loose gravel.	Migrates during spring; holds in headwaters areas, and spawns during late summer and early fall	Highly unlikely – no suitable habitat in the project area.
Plants					
<i>Astragalus tener</i> var. <i>ferrisiae</i>	Farris' milk-vetch	--/--/CNPS 1B.1	Meadows and seeps in the Central Valley and foothill grasslands with alkaline soil.	April to May	Low – habitat is not the typical habitat community in which this species is found.
<i>Atriplex cordulata</i>	heartscale	--/--/CNPS 1B.2	Found in meadows and seeps in valley and foothill grassland (sandy/saline or alkaline soils).	April to October	Low – habitat is not the typical habitat community in which this species is found.
<i>California macrophylla</i>	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.

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Special-status Plant and Animal Species Reported near the MFWC Well Project Area

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Scientific Name	Common Name	Federal/ State/CNPS Status	Habitat Requirements	Breeding/Nesting/ Bloom Season	Potential for Species within Project Area
<i>Chloropyron palmatum</i>	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.
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	wooly rose- mallow	--/--/CNPS 1B.2	Found along the margins of marshes, swamps, wetlands, and waterways (fresh water).	June to September	Highly unlikely – no suitable habitat present.
<i>Layia septentrionalis</i>	Colusa layia	--/--/CNPS 1B.2	Valley and foothill grasslands and woodlands on serpentine or sandy soils.	April to May	Low – habitat is not the typical habitat community in which this species is found.
<i>Navarretia leucocephala</i> ssp. <i>Bakeri</i>	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.
<i>Silene verecunda</i> ssp. <i>verecunda</i>	San Francisco campion	--/--/CNPS 1B.2	Found in coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grasslands in sandy soils.	March to August	Low – suitable habitat present. Area is highly disturbed and routinely managed (i.e., mowed, disked).
<i>Trichocoronis wrightii</i> var. <i>wrightii</i>	Wright's trichocoronis	--/--/CNPS 2.1	Found in vernal pools, meadows, seeps, marshes, and swamps.	May to September	Highly unlikely – no suitable habitat present.

^aFederal listing includes all spawning populations south of the Eel River.^bNational 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 (CNDDDB). 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.

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Notes:

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

Federal:

CE = Candidate Endangered

FC = Federal Candidate for Listing as Threatened or Endangered

FE = Federal Endangered

FT = Federal Threatened

State:

CSC = California Species of Concern

SE = State Endangered

ST = State Threatened

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
 MFWC Groundwater Production Element Project

Scientific Name	Common Name	Growth Habitat	Indicator Status ^a
Asteraceae			
<i>Centaurea solstitialis</i>	yellow star-thistle	Herb	NL
<i>Lactuca serriola</i>	prickly lettuce	Herb	FAC
<i>Silybum marianum</i>	milk thistle	Herb	NL
Brassicaceae			
<i>Brassica nigra</i>	black mustard	Herb	NL
<i>Lepidium latifolium</i>	perennial pepperweed	Herb	
Geraniaceae			
<i>Erodium botrys</i>	broadleaf filaree	Herb	NL
<i>Erodium cicutarium</i>	redstem filaree	Herb	NL
Malvaceae			
<i>Malvaceae</i> sp.	globe mallow	Herb	NL
Myrsinaceae			
<i>Anagallis arvensis</i>	scarlet pimpernel	Herb	FAC
Poaceae			
<i>Avena fatua</i>	wild oat	Herb	NL
<i>Bromus diandrus</i>	ripgut brome	Herb	NL
<i>Bromus hordeaceus</i>	soft chess	Herb	UPL
<i>Hordeum murinum</i> ssp. <i>glaucum</i>	foxtail	Herb	NL
<i>Vulpia myuros</i>	rat-tail fescue	Herb	NL

^aIndicator Status from the *National List of Plant Species that Occur in Wetlands; California (Region 0)* (Reed, 1988).

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:

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.

NL = Not included on the 1988 list.

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

MFWC Groundwater Production Element Project

Scientific Name	Common Name	Observation Type
Birds		
<i>Cathartes aura</i>	turkey vulture	Visual
<i>Buteo jamaicensis</i>	red-tailed hawk	Visual
<i>Buteo swainsoni</i>	Swainson's hawk	Visual
<i>Zenaida macroura</i>	mourning dove	Visual
<i>Colaptes auratus</i>	northern flicker	Visual
<i>Sayornis nigricans</i>	black phoebe	Visual
<i>Tyrannus verticalis</i>	western kingbird	Visual
<i>Aphelocoma californica</i>	western scrub jay	Visual
<i>Pica nuttalli</i>	yellow-billed magpie	Visual
<i>Corvus brachyrhynchos</i>	American crow	Visual
<i>Tachycineta bicolor</i>	tree swallow	Visual
<i>Turdus migratorius</i>	American robin	Visual
<i>Sturnus vulgaris</i>	European starling	Visual
<i>Dendroica coronata</i>	yellow-rumped warbler	Visual
<i>Carpodacus mexicanus</i>	house finch	Visual
<i>Agelaius phoeniceus</i>	red-winged blackbird	Visual
Mammals		
<i>Thomomys bottae</i>	pocket gopher	Visual
<i>Lepus californicus</i>	black-tailed hare	Visual

Appendix E

Construction Emissions Calculations

APPENDIX E

MFWC Construction Emission Summary

EA/IS and FONSI/MND for MFWC Groundwater Production Element Project

Emission Source	Emissions					
	ROG	CO	NOx	SOx	PM10	PM2.5
Average Daily Emissions (lbs/day)	2	9	15	0.0047	14	4
Annual Total (tons/yr)	0.03	0.13	0.23	0.0001	0.21	0.05
FRAQMD Construction Thresholds ^a	25 lbs/day multiplied by project length, not to exceed 4.5 tons per year	NE	25 lbs/day multiplied by project length, not to exceed 4.5 tons per year	NE	80	NE
FRAQMD Thresholds based on Project Length (tons/yr) ^a	0.375	NE	0.375	NE	NE	NE
Threshold Exceeded?	No	NA	No	NA	No	NA

^aThe project was evaluated as a Type 2 project, one that does not have an operational phase. ROG and NOx construction emissions may be averaged over the project life, not to exceed 4.5 tons/yr (FRAQMD, 2010). For example, for a project that lasts 6-months, the maximum allowed emissions are 4,500 pounds (25 lb/day * 30 days/month * 6 months) or 2.25 tons per year (FRAQMD, 2010). For the proposed project, the maximum allowed ROG or NOx emissions would be 750 pounds (25 lbs/day * 30 days) or 0.375 tons/yr, and the FRAQMD Standard Mitigation Measures would be incorporated as project environmental measures.

NE = Threshold has not been established

NA = Not applicable

Worker Commute Trips				Emissions (lb/day)					
Construction Phase	# of Workers/Day	Days of Work	Miles Traveled per Round Trip	ROG	CO	NOx	SOx	PM10	PM2.5
Well Drilling	7	10	50	0.007	0.71	0.071	0.0023	0.020	0.009
Well Development	4	20	50	0.004	0.40	0.041	0.0013	0.011	0.005
Aboveground Facilities	5	10	50	0.0050	0.504	0.0507	0.0017	0.0143	0.0066

Round trip mileage represents the distance from the construction site to the nearest city, in this case Yuba City, CA.

Well drilling emissions are based on the assumption that well drilling will occur 7 days per week, with two work crews working 12 hours each day.

Well Development and Aboveground Facilities Construction emissions are based on the assumption that crews will work 7 days per week, 12 hours per day.

It is assumed that the Well Development and Aboveground Facilities Construction activities will occur simultaneously.

Vehicle Emissions				Emissions (lb/day)					
Construction Phase	# of Vehicle Trips	Miles Traveled Round Trip	Number of Days	ROG	CO	NOx	SOx	PM10	PM2.5
Crew Vehicles	3	20	30	0.007	0.233	0.021	0.001	0.006	0.004
Cement Delivery Trucks	3	50	4	0.120	0.613	3.006	0.005	0.110	0.089
Fuel Delivery Trucks	1	50	4	0.040	0.204	1.002	0.002	0.037	0.030

It is assumed that cement truck deliveries will occur on 4 days during the aboveground construction phase of the project, with three deliveries per day.

It is assumed that fuel truck deliveries will occur weekly during all phases of construction (4 days total).

Source: FRAQMD. 2010. Indirect Source Review Guidelines. June 2010. Available at: <http://www.fraqmd.org/PlanningTools.htm>.

Project length (days)

30

APPENDIX E

Road Emission Factors

EA/IS and FONSI/MND for MFWC Groundwater Production Element Project

Exhaust Emission Factors

Vehicle	Vehicle Type in EMFAC2007	2011 Emission Factors (lb/mile)						
		ROG	CO	NOx	SOx	PM10	PM2.5	CO2
Trucks	Heavy Duty Diesel Truck	0.0008	0.0041	0.0200	0.00004	0.0007	0.0006	3.7501
Crew Trucks	Light Duty Truck, Gasoline	0.0001	0.0039	0.0004	0.0000	0.0001	0.0001	1.9748
Employee Commute	Passenger Vehicles, Gasoline	0.0000	0.0020	0.0002	0.00001	0.0001	0.00003	0.6236
Vehicle	Vehicle Type in EMFAC2007	2011 Emission Factors (g/mile)						
		ROG	CO	NOx	SOx	PM10	PM2.5	CO2
Trucks	Heavy Duty Diesel Truck	0.362	1.855	9.091	0.016	0.334	0.269	1701.031
Crew Trucks	Light Duty Truck, Gasoline	0.054	1.759	0.161	0.009	0.048	0.032	895.79
Employee Commute	Passenger Vehicles, Gasoline	0.009	0.915	0.092	0.003	0.026	0.012	282.851

Emission factors from the California Air Resources Board's EMFAC 2007 model for Sutter County, assuming crew trucks travel at 10 mph and diesel trucks and employee vehicles travel at 45 mph.

7/21/2011 10:36:59 AM

Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Projects\Waldrop\Meridian\MFWC_Prod_Well.urb924

Project Name: MFWC Well Installation Sutter County

Project Location: California State-wide

On-road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10 Total</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5 Total</u>	<u>CO2</u>
2011	0.03	0.22	0.12	0.00	0.20	0.01	0.21	0.04	0.01	0.05	34.94
Trenching 10/01/2011-10/10/2011	0.02	0.17	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	29.78
Trenching Off-road Diesel	0.02	0.17	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	29.52
Trenching Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
Mass Grading 10/11/2011-10/30/2011	0.01	0.05	0.04	0.00	0.20	0.00	0.20	0.04	0.00	0.05	5.17
Mass Grading Dust	0.00	0.00	0.00	0.00	0.20	0.00	0.20	0.04	0.00	0.04	0.00
Mass Grading Off-road Diesel	0.01	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.91
Mass Grading On-road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26

Phase Assumptions

Phase: Mass Grading 10/11/2011 - 10/30/2011 - Well Development

Total Acres Disturbed: 2

Maximum Daily Acreage Disturbed: 1

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On-road Truck Travel (VMT): 0

Off-road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 12 hours per day

Phase: Trenching 10/1/2011 - 10/10/2011 - Well Drilling

Off-road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 24 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 24 hours per day

Appendix F
CEQA Checklist Signature Page

The environmental factors checked below would be potentially affected by the proposed project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- | | | |
|---|---|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology/Soils |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards and Hazardous Materials | <input checked="" type="checkbox"/> Hydrology/Water Quality |
| <input type="checkbox"/> Land Use/Planning | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Population/Housing | <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Transportation/Traffic | <input type="checkbox"/> Utilities/Service Systems | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

DETERMINATION: (To be completed by the lead agency)

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION would be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there would not be a significant effect in this case because revisions in the proposed project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION would be prepared.
- ☐ I find that the proposed project MIGHT have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MIGHT have a "Potentially Significant Impact" or "Potentially Significant Unless Mitigated" impacts on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (1) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (2) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed on the proposed project, nothing further is required.

Ron Long, General Manager

Date