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September 9, 2010

Sent via electronic mail

Ms. Kim Squires
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Ms. Marcia Grefsrud
California Department of Fish and Game
Central Coast (Region 3)
7329 Silverado Trail
Napa, CA 94558

Subject: Mariposa Energy Project (MEP) Biological Resources Mitigation Supplemental Information (USFWS Reference No. 81420-2009-TA-1306-1)

Dear Kim and Marcia:

Mariposa Energy has prepared the attached technical materials in response to your requests for additional information during our meeting on August 12th, 2010. The following items are attached for your review:

1. Updated MEP Project Description and Conservation Measures. This is a consolidated and updated version of these portions of the MEP April 2010 Biological Assessment text incorporating the project changes and mitigation measures outlined in the July 2, 2010 Responses to USFWS Information Requests and discussions held during the August 12, 2010 project meeting. This document also presents the compensatory mitigation approach discussed during the August 12th meeting.

2. Technical Memorandum: California Tiger Salamander and California Red-Legged Frog Capture and Relocation Plan

3. Technical Memorandum: Mariposa Energy Project, Direct and Indirect Effects to Listed Branchiopod Habitat during Construction

4. Figure 1 showing potential California tiger salamander breeding sites within 1 mile (1.6km) of MEP

5. Technical Memorandum: MEP Swainson's Hawk (Buteo swainsoni) Survey

Please feel free to contact me at (916) 286-0348 (doug.urry@ch2m.com) or Todd Ellwood at (408) 839-2402 (todd.ellwood@ch2m.com) with any additional questions.

Sincerely,

Doug Urry
CH2M HILL Project Manager

Attachments

cc: Craig Hoffman, CEC
Sara Keeler, CEC
Todd Ellwood, CH2M HILL
Bo Buchynsky, Mariposa Energy, LLC

ATTACHMENT 1

UPDATED MEP PROJECT DESCRIPTION AND CONSERVATION MEASURES

MEP Project Description

The proposed project's action area consists of the following elements and respective acreages. Action area is defined as all areas to be directly or indirectly affected during construction and operation of Mariposa Energy Project (MEP).

- The 10.3-acre MEP facility site and main access road, and 9.2-acre temporary parking and construction laydown yard
- A 1-acre (580-linear-feet-by-75-feet-wide) natural gas pipeline work corridor comprising a new underground pipeline
- An 8.5-acre (0.7-mile-long-by-100-feet-wide) transmission line work corridor comprised of eight new transmission line poles, overland access routes, and a 0.6-acre temporary staging area
- A 5.4-acre (1.8-mile-long-by-20-foot-wide) water supply pipeline work corridor comprised of a new underground pipeline, a 250 square-foot permanent pump and intake structure, and a 1-acre temporary staging area

The following paragraphs describe the purpose and need, project location, project designs, site preparations, and avoidance, minimization, and compensation measures.

1.1.1 Project Purpose and Need

The primary objective of the proposed project is to provide dispatchable, operationally flexible, and efficient electricity generation to meet Pacific Gas and Electric's (PG&E) need for new energy sources and to satisfy the terms of Mariposa Energy's power purchase agreement with PG&E. PG&E issued a Request for Offers on April 1, 2008, indicating that additional peak electric generation capacity is needed. In accordance with the California Public Utilities Commission Decision 07-12-052, PG&E needs to acquire between 800 and 1,200 MW of new resources, with a preference for dispatchable and operationally flexible resources.

Operationally flexible resources, such as peaker power plants, are required for integration of intermittent renewable resources, such as solar and wind facilities. Additionally, peaking capacity is needed to respond to increases in the local demand for electricity that typically occur in the afternoons of summer days. A facility that provides peaking capacity must be able to be up and running at peak generation within 10 minutes to meet California Independent System Operator requirements. As a peaking facility, MEP will not run continuously, but instead will start, run for as many hours as necessary, and then shut down. Although the facility will be licensed and permitted to operate up to 4,000 hours per year (46 percent of the time) with 300 start and stop cycles, as a peaking power plant, its actual capacity factor will be much less. The plant is expected to operate approximately 600 hours per year with 200 start and stop cycles (Mariposa Energy, 2009). The project is designed to reliably provide this type of fast-start capability and highly flexible dispatchable energy and capacity.

1.1.2 Project Location

The MEP site is in northeastern Alameda County, in an unincorporated area designated as Large Parcel Agriculture by the East County Area Plan. The site is located approximately 7 miles northwest of Tracy, 7 miles east of Livermore, 6 miles south of Byron, and approximately 2.5 miles west of the community of Mountain House in San Joaquin County . The facility will be located southeast of the intersection of Bruns Road and Kelso Road on a 10-acre portion of an approximate 158-acre parcel immediately south of the Bethany Compressor Station and 230-kV Kelso Substation, both owned by PG&E. The proposed power plant site is located in the southern portion of the project parcel. The existing, unrelated 6.5-MW Byron Power Cogen Plant occupies 2 acres of the 158-acre parcel northeast of the proposed MEP site. The remainder of the parcel is non-irrigated grazing land and will remain as such during MEP operation. A wind turbine development was once located on the southern portion of the parcel, including the MEP site. Concrete foundations and other miscellaneous debris, including remnants of turbine housings, remain onsite.

1.1.3 Project Design

. Table 1 below shows the acreages of the action area, including a clarification of existing developed and undeveloped lands. The project will have the following design features:

- Power generating facility consisting of four GE LM6000 PC Sprint combustion turbine generators (CTGs) and associated support equipment
- Air emissions control systems including selective catalytic reduction (SCR) systems for nitrogen oxides (NOx) control and oxidation catalyst for carbon monoxide (CO) control
- A new approximately 0.7-mile-long, 230-kV transmission line to deliver the plant output to the electrical grid via the existing 230-kV Kelso Substation located north of the project site
- Approximately 580 feet of new 4-inch-diameter natural gas pipeline that will run directly northeast from the project site to interconnect with PG&E's existing high-pressure natural gas pipeline
- A new 6-inch-diameter, 1.8-mile water supply line from the Byron Bethany Irrigation District (BBID) Canal 45 delivering raw water to the project site

TABLE 1
Total Project Action Area - Developed and Undeveloped Areas
Mariposa Energy Project

Work Area	Action Area Description	Total Action Area (Acres)	Existing Developed Area[a] (Acres)	Undeveloped Area[b] (Acres)
MEP Site[c]	Annual Grassland	12.6	0	12.6
MEP Access Road[d]	Gravel road and annual grassland	0.6	0.2	0.4
MEP Laydown Yard	Annual grassland	9.2	0	9.2

TABLE 1
Total Project Action Area - Developed and Undeveloped Areas
Mariposa Energy Project

Work Area	Action Area Description	Total Action Area (Acres)	Existing Developed Area[a] (Acres)	Undeveloped Area[b] (Acres)
Natural Gas Line	Annual grassland	1.0	0	1.0
230-kV Transmission Line	Annual grassland	8.5	0	8.5
Water Supply Line	Annual grassland, Bruns Road right-of-way, existing BBID maintenance yard, agricultural road and Canal 45	5.4	2.8	2.6
	Total Area	**37.3**	**3.0**	**34.3**

Notes:

[a] Developed areas are not considered habitat for the listed species. They include the Bryon Cogen access road, paved surface of Bruns Road, and the 1-acre BBID maintenance yard.

[b] Undeveloped areas are considered suitable or potential suitable for the listed species. They include annual grassland, roadside ruderal, and agricultural lands.

[c] Includes 9.7-acre site, 2.3-acre cut and fill area and 0.6-acre temporary access along the north side of the MEP site.

[d] Includes existing 10-foot-wide Bryon Cogen gravel access road.

1.1.3.1 Onsite Facilities

MEP will be a nominal 200-MW (194 MW net at 59 degrees Fahrenheit [°F]), simple-cycle generating facility consisting of four power blocks. Each power block will contain one GE LM6000 PC-Sprint natural gas-fired CTG. The generated power will be delivered to the grid through the Kelso Substation. MEP will be designed, constructed, and operated in accordance with applicable laws, ordinances, regulations, and standards. The main access to the site will be from Bruns Road. A portion of the power blocks will be paved to provide internal access to all project facilities and onsite buildings. The areas around equipment, where not paved, will have gravel surfacing.

The generating facility CTGs are equipped with SCR air emissions control equipment and associated support equipment for NOx and CO control. Each CTG will generate approximately 50 MW (gross) at base load under average ambient conditions. The project is expected to have an overall annual availability of 92 to 98 percent, including scheduled and forced outages. The design of the plant will provide for operating flexibility. Each CTG is designed to start and ramp up to full power in 10 minutes. Each CTG also provides various ancillary services, such as ramp-up, ramp-down, and spinning reserve, allowing MEP to readily adapt to changing conditions in the energy and ancillary services markets.

Electrical Equipment and Systems – Alternate Current Power Transmission. The electric power generated by this facility will be transmitted to the electrical grid, with the exception of the power required for onsite auxiliaries such as pumps, fans, gas compressors, and other parasitic loads. A station battery system will be used to provide backup power for critical loads and control systems. Power will be generated by the four CTGs at 13.8 kV and then stepped up using four 13.8/230-kV, oil-filled generator step-up transformers to support connection to the local 230-kV network. Surge arrestors will protect the transformer from surges in the 230-kV system caused by lightning strikes or other system disturbances. The transformers will be set on a concrete foundation that includes a secondary oil containment reservoir (to contain the transformer oil in the event of a leak or spill). The high-voltage side of the generator step-up transformer will be connected to a single-circuit, three-phase, 230-kV transmission line, which will be connected to the PG&E 230-kV switchyard at the Kelso Substation located north of the project site on Bruns Road.

Air Emission Control and Monitoring. Air emissions from the combustion of natural gas in the CTGs will be controlled using state of-the-art systems. To ensure that the systems perform correctly, NOx and CO will be continuously monitored. The CTGs selected for the proposed project include demineralized water injection and SCR to control emissions of NOx. The SCR process will use 19 percent aqueous ammonia. Ammonia slip, or the concentration of unreacted ammonia in the stack exhaust, will be limited to 5 parts per million by volume, averaged over 1 hour. The SCR equipment will include a reactor chamber, catalyst modules, ammonia storage system, ammonia vaporization and injection system, and monitoring equipment and sensors. The project will use an ammonia delivery system, which consists of a 10,000-gallon ammonia tank, spill containment basin, and refilling station with a spill containment basin and sump.

The combustion turbine combustors incorporate staged combustion of a premixed fuel/air charge, resulting in high thermal efficiencies with reduced CO and volatile organic compound (VOC) emissions. CO and VOC emissions will be further controlled by means of CO oxidation catalysts. Particulate emissions will be controlled by the use of best combustion practices; the use of natural gas, which is low in sulfur, as the sole fuel for the CTGs; and high-efficiency air inlet filtration.

For each CTG, a separate continuous emissions monitoring system (CEMS) will sample, analyze, and record fuel gas flow rate; NOx and CO concentration levels; and percentage of oxygen in the exhaust gas from the stacks. The CEMS sensors will transmit data to a data acquisition system that will store the data and generate emission reports in accordance with permit requirements. The system will also include alarm features that will send signals to the plant control system when the emissions approach or exceed preselected limits.

Wastewater and Stormwater Handling. MEP has been designed as a zero liquid discharge (ZLD) facility for wastewater. Process wastewater and stormwater runoff from all of the plant equipment process areas will be collected, treated, and recycled for use onsite. General plant drains will collect containment area washdown, sample drain water, and facility equipment drainage. Water from these areas will be collected in a system of floor drains, hub drains, sumps, and piping and routed through an oil/water separator before ZLD treatment. Equipment drains that have the potential to be contaminated with oil will be valved shut to prevent rain water from draining, unless the water has been first inspected.

A truck-mounted ZLD treatment system will include a walnut-shell-activated carbon vessel followed by a surge tank and five micron bag filters and pH adjustment if necessary. The treated ZLD reclaim water then will be recycled back to the raw water storage tank for reuse. Any oily waste collected in the oil/water separator will be transferred to 55-gallon drums and hauled offsite for proper disposal. Wastewater from infrequent combustion turbine water washes and from the fuel filtration skids will be collected in holding tanks or sumps and will be trucked offsite for disposal at an approved wastewater disposal facility. Sanitary wastewater from sinks, toilets, showers, and other sanitary facilities will be routed to an onsite holding tank and trucked offsite for treatment.

Stormwater collected in process areas will drain into the general plant drain system to be recycled, as previously described. Stormwater runoff that is outside of the process areas will be captured in the site stormwater drainage system and conveyed to the onsite extended detention basin located at the north end of the MEP site. The extended detention basin is designed to release site stormwater runoff from the design storm capture volume over a 48-hour period. It is not designed to hold water for longer periods. The multi-stage discharge structure will discharge to one of two swales routing upgradient stormwater around the site. All surfaces within the site perimeter (including the surface of the perimeter road) will drain to the extended detention basin, with the exception of the segregated process area drainage described previously. Two grass-lined swales will convey upgradient stormwater drainage around the MEP site; site runoff will not drain directly to these swales. Stormwater will be released from the swales back to the natural drainage course through rip-rap energy dissipators.

1.1.3.2 Offsite Linear Facilities

230-kV Transmission Line. The proposed project will be interconnected with the regional electrical grid by a new, approximately 0.7-mile-long, single-circuit, three-phase, 230-kV transmission line. The proposed 230-kV line will run generally north from the MEP site, staying east of the Byron Power Cogen Plant, crossing Kelso Road, and staying east of the PG&E Bethany Compressor Station. It will turn west just north of the Kelso Substation, then turn south to the final interconnect point at the Kelso Substation.

The proposed interconnecting 230-kV transmission circuit is expected to consist of a single circuit configuration, supported by eight new steel monopole structures, ranging in height from 84 to 95 feet, located at appropriate intervals. A 10-foot-diameter concrete foundation will support each new monopole structure. No new access or service roads are needed along the transmission line corridor. Because the topography of the transmission corridor is generally flat and grazed by cattle with no trees, grading will not be required to access the line during construction or operation. During construction, rubber-tired line trucks and support vehicles (for example, pickup trucks) will access the transmission line work corridor overland.

The proposed line will exit the onsite switchyard from the take-off structures and will connect to the new steel-monopole, single-circuit structures. The project switchyard will use a single 230-kV circuit breaker for the four generating units and a generator step-up transformer for each generating unit. Auxiliary controls and protective relay systems for the project's switchyard will be located in the power plant control building.

Natural Gas Pipeline. The proposed project will require construction of an offsite pipeline to supply natural gas to the MEP site. PG&E operates two existing high-pressure natural gas transmission pipelines just northeast of the MEP site. The proposed 4-inch-diameter, natural gas

supply pipeline will tap into the existing PG&E Line 2 and be routed underground, entering the MEP site at its northeastern corner. The entire approximately 580-foot pipeline will be constructed within the 158-acre project parcel. It is expected that PG&E will construct, own, and operate this new pipeline.

The 10-acre MEP site will include a gas metering station to measure and record gas volumes. Additionally, facilities to regulate the gas pressure and remove any liquids or solid particles will be installed as required. The new metering station will include a pad and above- and below-ground gas piping, metering equipment, gas conditioning, pressure regulation, and possibly pigging facilities. A distribution power line will also be needed to provide power for metering station operation lighting and communication equipment. A perimeter chain-link fence will provide security around the gas metering station.

Water Supply Pipeline. The project will use raw water supplied by BBID via a new 6-inch-diameter, 1.8-mile water supply pipeline placed in or along the east side of Bruns Road, from Canal 45 south to the MEP site. Approximately 1,000 feet of pipeline will be located adjacent to Bruns Road on BBID property (an agricultural road) from the pump station to the new BBID headquarters facility. South of the BBID headquarters, the pipeline will be located within the Bruns Road right-of-way under the pavement. Seven culverts are located along the water line route in Bruns Road, including two concrete box culverts and five corrugated metal pipe culverts. Each culvert is associated with either an ephemeral drainage or roadside ditch. Because of right-of-way constraints, underground tunneling (for example, pipe ramming) will be used to install the pipeline beneath four of these culverts. For the remaining three drainages, open-cut trenching will be used to install the pipeline around the culverts, but within the road right-of-way. The pipeline route will follow the MEP main access road (an existing gravel road) from Bruns Road to the MEP site.

Associated facilities will include a 36-square-foot concrete turnout structure in Canal 45 and an approximately 250-square-foot pump station consisting of a precast concrete manhole wet wells, redundant vertical turbine pumps, pipe manifold and valving, an electrical cabinet, and instrumentation. The raw water is for all water uses needed by MEP, including process water, safety showers, fire protection, service water, and domestic uses.

1.1.4 Site Preparation Activities

Site preparation activities include the following:

- Preconstruction surveys for special-status species
- Designation of construction work areas and exclusionary zones
- As-needed vegetation removal
- As-needed removal of abandoned equipment and materials from previous wind farm
- Designation of temporary staging and laydown areas
- Designation of temporary construction access roads or routes

1.1.4.1 Preconstruction Surveys for Special-Status Species

A USFWS-approved biologist or team of approved biologists will conduct preconstruction surveys before vegetation removal or any other project-related ground disturbance activities. Species-specific preconstruction surveys, listed species relocation methods, and species-specific conservation efforts are detailed in Section 4.

1.1.4.2 Designated Construction Work Areas and Exclusion Zones

Disturbances will be minimized to the extent feasible by establishing the approved work area boundaries before ground-breaking activities. Access to sensitive habitats such as seasonal wetlands will be discouraged by developing construction exclusion zones around environmentally sensitive areas during project construction. To minimize the potential for entry into the construction zone by listed species, including California red-legged frog and California tiger salamander, an exclusion fence will be installed and properly maintained along the outside perimeter of the MEP construction site and adjacent 9.2-acre laydown area, and the main access road, for the duration of project construction. The exclusionary fence will also help to minimize the potential for indirect effects of erosion, such as sediment-laden water, on nearby water resources. All work areas will be delineated using high-visibility orange mesh fencing, flagging, signage, or other appropriate means to limit personnel and vehicular access outside the action area.

1.1.4.3 Vegetation Removal

The project area is characterized as grazed non-native annual grassland. Therefore, vegetation removal can be accomplished by removing the vegetation and topsoil concurrently using heavy machinery such as graders, scrapers, bulldozers, or excavators. Larger equipment (scrapers and graders) will likely be used at the 10-acre plant site (including main access road) and adjacent 9.2-acre temporary laydown area for clearing and grubbing. Topsoil stripped from these work areas will be stockpiled onsite for later use during post-construction restoration of temporarily disturbed areas including the laydown area and MEP cut and fill slopes. Any surplus topsoil (mixed with grubbed grasses and forbs) will be hauled off site to an approved waste disposal facility.

Along the Project's gas line and soil areas of the water line, only grassland vegetation and topsoil within the trench line will be removed. With the exception of drainage crossings, topsoil from the water line trenching within the Bruns Road right-of-way will not be segregated due to the highly disturbed nature of this roadside area and space constraints of this work corridor. During open-cut trenching, a smaller machine such as an excavator or backhoe will remove the vegetation and topsoil, stockpiling it separately from the remainder of the excavated soil. Construction access and staging adjacent to the trench line within the approved work corridor will be overland, resulting in vegetation disturbance, not removal. Construction access and staging along the Project's transmission line corridor will be similar as just described for the gas and water lines. Only a small amount of vegetation and topsoil will be removed at each transmission line pole site to prepare the work area for excavation and a concrete foundation. No listed plant species were detected in the action area during 2009 protocol-level rare plant surveys. Because no trees exist in the action area, none will be affected by the proposed project. A USFWS-approved biologist will conduct preconstruction surveys for listed species before any vegetation disturbance. The 9.2-acre laydown area and temporary offsite facility work areas will be restored to annual grassland habitat immediately following their use. Because of the potential for excessive compaction in areas of the temporary 9.2-acre laydown and parking area from vehicles, equipment, and heavy machinery, ripping will be performed in the affected areas to facilitate restoration to preconstruction conditions.

1.1.4.4 Wind Farm Equipment Removal

Limited components from a prior wind farm were abandoned and remain at the site. Remaining features include electrical panel and turbine concrete foundations, underground utility conduit, and miscellaneous parts and debris. These features will be removed from the site prior to construction to minimize delays during construction.

1.1.4.5 Temporary Staging and Laydown Areas

Temporary construction facilities will include a 9.2-acre worker parking and laydown area immediately east of the MEP site; a 1-acre water supply pipeline parking and laydown area located at the BBID headquarters facility on Bruns Road; and a 0.6-acre laydown area along the transmission line route next to the PG&E Kelso Substation and Bethany Compressor Station. Equipment staging for the construction of the gas line will take place in the 9.2-acre laydown area. This laydown area will be in use for approximately 12 months, including during the wet season. Because heavy machinery will be used at the site, portions of the 9.2-acre laydown area will require gravel or road base with an underlayment of geotextile fabric for stabilization. Topsoil stripped from the laydown will be stockpiled onsite inside the laydown area. During project completion, ripping will be performed to a depth no less than 2 feet to reduce compaction of underlying native soils. The resulting roughed soil surface will be smoothed and covered with salvaged topsoil removed from the laydown area during initial ground-breaking activities. The base rock and fabric underlayment will be removed before ripping and replacing the topsoil. This procedure will facilitate post-construction restoration, including recolonization by fossorial mammals. The temporary laydown area located within the transmission line work corridor will not require a base rock and fabric underlayment or vegetation removal. Because this laydown will be sited in grazed annual grassland that is generally flat, no grading will be required. The temporary laydown area for the water supply pipeline will be located within an existing maintenance yard at BBID's headquarters.

1.1.4.6 Construction Access

The existing gravel road from Bruns Road provides access to the Byron Cogen Power Plant. A portion of this gravel road will be improved and used during construction and operation of the MEP. Improvements resulting in a permanent loss of grassland habitat include widening the road from approximately 10 feet to about 20 feet, and adding an asphalt layer. Temporary overland access routes to the transmission line corridor and gas line corridor will originate from this main road, and all access to the offsite facilities work areas will occur in upland grassland areas only. A 0.6-acre temporary construction area immediately north of the MEP site will be required for initial site access, transmission line corridor access, and to perform site grading. With the exception of seasonal wetland 1 (SWL-1) located within the construction access area immediately north of the MEP site, all nearby seasonal wetlands, such as vernal pools, will be avoided during overland access. Access to the water supply pipeline corridor will be from existing roads including Bruns Road, a portion of the onsite main access road, and a BBID agricultural dirt road.

There are wetlands and other waters within 250 feet of the Project that are considered suitable habitat for California red-legged frog, California tiger salamander, and/or listed Branchiopods. With the exception of SWL-1, aquatic sites suitable for California red-legged frog, California tiger salamander, and listed Branchiopods will be avoided. SWL-1 is considered potentially occupied by listed Branchiopods and will be removed during project construction. Construction

perimeter fence (for example, orange snow fence) and/or wildlife exclusion fencing will be installed at the greatest distance feasible from aquatic sites to discourage site workers, vehicles, and construction machinery from straying offsite into them. An onsite biological monitor will also be present to advise all site workers to stay inside approved work areas at all times.

Potential direct effects to water quality from contaminated runoff or airborne dust will be avoided by the implementation of standard erosion and/or sedimentation control devices, fugitive dust management, avoidance, and other Best Management Practices (BMPs) prescribed by the Project's approved Stormwater Pollution Prevention Plan (SWPPP) and Fugitive Dust Mitigation Plan. When feasible, ground disturbance within 250 feet of wetlands and waters will occur during dry weather to significantly minimize the potential for the direct effects from runoff. If this seasonal avoidance cannot be achieved, silt fence or other appropriate construction BMPs will be used to provide a barrier to offsite discharge of pollutant-laden stormwater. As-needed dust control measures (e.g., wetting dry ground) will minimize airborne transmission of soil particles into nearby aquatic habitats. Equipment fueling, maintenance, and repairs (other than emergency repairs), in addition to storage of hazardous materials (fuels and lubricants) will occur offsite or greater than 200 feet from nearby wetlands and waters, including in the temporary laydown area. Other hazardous materials handling BMPs, including but not limited to secondary containment and not topping off fuel tanks will be enforced to prevent soil contamination.

Excavation will not occur within 250 feet of Branchiopod habitat (with the exception of SWL-1), which could cause an indirect effect to the habitat if an underlying claypan is punctured or if surface hydrological patterns are altered. Not including SWL-1, the only ground disturbance being proposed within 250 feet of Branchiopod habitat is at the transmission line corridor, where utility line trucks, boom trucks, cranes, and light-duty trucks will drive and park within 250 feet of branchiopod habitat daily along the route. Excavation will not occur within 250 feet of listed Branchiopod habitat for transmission line construction. Because the access corridor is level and generally flat, no grading will occur to facilitate access to each new transmission line pole.

All temporarily disturbed areas will be restored to pre-project conditions when project work has been completed in that area. Construction debris and materials will be removed and disturbed soil areas will be recontoured to match adjoining grades. Finally, post construction BMPs (as prescribed in the SWPPP) will be installed including reseeding the area to facilitate timely restoration.

1.1.5 Construction Activities

1.1.5.1 Main Site Facilities

Construction of the generating facility and use of the 9.2-acre laydown area, from site preparation, sub-excavation, grading, and installation of foundations and infrastructure, to commercial operation, is expected to take place from April 2011 to July 2012 (14 months total). After site preparation and preconstruction activities have been completed, the MEP components will be installed. The four power blocks will be constructed year round. The average and peak workforce will be approximately 89 and 177, respectively, of construction craft, supervisory, support, and construction management personnel onsite during construction. Typically,

construction will be scheduled to occur between 7 a.m. and 7 p.m. on weekdays and 8 a.m. and 5 p.m. on Saturdays. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities, such as pouring concrete at night during hot weather or working around time-critical shutdowns and constraints. During some construction periods and the startup phase, some activities may continue 24 hours per day, 7 days per week.

1.1.5.2 Offsite Linear Facilities

Natural Gas Pipeline. The natural gas pipeline will generally consist of the following construction elements within the 75-foot wide construction corridor.

- **Trenching** width will depend on the type of soils encountered and requirements of the worker safety standards. Trenching will be performed using a backhoe excavator; the optimal trench will be approximately 30 inches wide and 54 inches deep. If loose soil is encountered, a trench up to 10 feet wide at the top and 2 feet wide at the bottom may be required. The pipeline will be buried to provide a minimum cover of 36 inches. The excavated soil will be piled on one side of the trench and used for backfilling after the pipe is installed. Any excess soil will be loaded into a dump truck and either used on the MEP site or hauled offsite by the construction contractor. The pipeline will be installed through trenching at all locations. No boring or directional drilling is required to pass beneath other buried utilities or infrastructure.
- **Stringing** consists of trucking lengths of pipe to the right-of-way and laying them on wooden skids beside the open trench.
- **Installation** consists of bending, welding, and coating the weld-joint areas of the pipe after it has been strung; padding the ditch with sand or fine spoil; and lowering the pipe string into the trench. Bends, if required, will be made using a cold bending machine or will be shop fabricated as required for various changes in bearing and elevation. Welds will undergo 100 percent radiographical inspection by an independent, qualified radiography contractor. All coating will be checked for defects and will be repaired before lowering the pipe into the trench.
- **Backfilling** consists of returning spoil back into the trench around and on top of the pipe, ensuring that the surface is returned to its original grade or level. The backfill will be compacted to protect the stability of the pipe and to minimize subsequent subsidence.
- **Plating** consists of covering any open trench in areas of foot or vehicle traffic at the end of a work day. Plywood plates will be used in areas of foot traffic and steel plates will be used in areas of vehicle traffic. Plates will be removed at the start of each work day.
- **Hydrostatic testing** consists of filling the pipeline water, venting all air, increasing the pressure to the specified code requirements, and holding the pressure for a period of time. After hydrostatic testing, the test water in the pipe and any that might leak out into the open trench will be analyzed for water quality and either discharged in accordance with regulatory requirements or trucked to an appropriate offsite treatment or disposal facility. The construction contractor will obtain all necessary approvals for test water use and disposal.

- **Cleanup** consists of restoring the surface of the ground by removing any construction debris, grading to the original grade and contour, and revegetating or restoring where required.
- **Commissioning** consists of cleaning and drying the inside of the pipeline, purging air from the pipeline, and filling the pipeline with natural gas.

Construction equipment includes, but is not limited to, a backhoe or tracked excavator; dump trucks; boom trucks or side booms; flat bed tractor trailers; and various smaller support vehicles, including light-duty pick-up trucks.

Water Supply Pipeline. Generally, the construction process for the water supply pipeline is similar to the gas pipeline construction process described above. However, the pipe for the water conveyance may be either polyvinyl chloride (PVC) or high-density polyethylene (HDPE), determined by the construction contractor. With the exception of the jointing technologies required for PVC or HDPE pipe, all the other construction elements described for the gas line would be essentially the same. Additionally, the trenching width is expected to be 12 to 18 inches for this pipeline. The 1-acre temporary laydown area located immediately next to BBID's headquarters is an existing active construction yard; therefore, no additional site preparation, including grading, clearing and grubbing, or armoring with base rock, is anticipated at the yard.

Two concrete box and five corrugated metal pipe (CMP) culverts under Bruns Road along the pipeline route must be avoided during water line construction. Four of these culverts convey ephemeral surface water from D-1, D-2, D-3, and D-4. The other three culverts are associated with roadside ditches or swales. Because of space constraints between the existing culverts and right-of-way edge, the new water pipeline will be installed under the culverts at D-1, D-3, SW-3 and D-4 by way of pipe ramming. Adequate space between the end of the culvert and the right-of-way boundary allows for open-cut trenching to install the new pipeline around the other three CMP culverts.

Pipe ramming will entail excavation of two access pits in the Bruns Road paved surface, approximately 10 feet on either side of the culvert, followed by use of a pneumatic hammer to drive a metal pipe/sleeve at least 1 foot below the bottom of the culvert. New pipe will then be inserted into the sleeve and the pits backfilled.

Transmission Line. Transmission line construction will generally entail the following activities within the 100-foot-wide work corridor:

- **Construction access** to the transmission line work corridor will be provided by existing roads and designated overland temporary access routes. Rubber-tired machinery and vehicles will drive through grassland areas during the dry season to the extent feasible. Trench plates will be used as necessary to avoid ground disturbance to nearby ephemeral drainages.
- **Monopole installation** will entail excavation for eight 10-foot diameter concrete foundations, installation of formwork, and pouring of concrete. Cranes and other support equipment will be used to erect each monopole on the new foundations. In general, a 1,000 square foot temporary work space is required at each pole site to accomplish these tasks.

- **Pull and tension sites** are the sites from which the conductors (wires) will be installed. Pull sites are generally located between designated monopoles. Reel and bullwheel puller trucks (wheeled vehicles with appropriate equipment) will be set up to pull the new conductor. Tension sites are generally located along the line, and equipment will be set up to pull in and tension the new conductor. The pull and tension sites will be sited within the established 100-foot-wide construction corridor. No mowing or grading of the work corridor will be required.
- **Line conductoring** will be accomplished using travelers (pulleys), insulators, and hardware. Travelers and insulators will be transported to each monopole by vehicle. Travelers will be installed on the pole arms, and a sock line will be used to pull the new line. After the new conductor is in place, it will then be "sagged" (pulled to the appropriate height and tension, which are interdependent), then transferred from the travelers and clipped permanently to the insulator. At dead-end poles/line end points, a boom truck will be needed to access the towers so crews can attach the dead-end eye to the monopole. Additionally, where splices exist along the alignment, a boom truck will be used to reach the conductor for the installation of new splices in areas where it will be feasible.

1.1.6 Site Cleanup and Restoration

All construction-related materials and the temporary laydown areas, staging areas, construction site security fences, and wildlife exclusion barriers will be removed after construction is complete. The staging areas and access routes will be cleaned up, returned to original grade, and revegetated with appropriate species, as necessary. An erosion control plan, detailed in the proposed project's Stormwater Pollution Prevention Plan (SWPPP), will help minimize erosion after construction. The plan will include soil stabilization measures such as hydroseeding and other appropriate stormwater best management practices (BMPs) for all temporarily affected areas within the action area.

1.1.7 Conservation Measures

The federal ESA has special requirements when an action could result in take or adverse modification to critical habitat for plant and animal species listed as threatened or endangered. Protective measures for listed species were developed using existing USFWS guidelines. The protective measures will also reduce or eliminate adverse effects on the action area's biological resources and species that do not have special ESA protective requirements. Protective measures developed for unavoidable project effects to eliminate or minimize adverse effects are described in detail further below. Compensation for loss of federally listed species habitat will be replaced at an appropriate loss to replacement ratio also as described below.

1.2 Construction Schedule

On June 15, 2009, Mariposa Energy filed an Application for Certification (AFC) under the CEC's 12-month licensing process, and was found to be "data adequate" on August 26, 2009, beginning the CEC 12-month review process. Mariposa Energy anticipates receiving a license by fall 2010 and beginning construction in January 2011. Pre-operational testing of the power plant will begin in January 2012, and full-scale commercial operation is contractually obligated

to commence by July 1, 2012. Table 2 below shows the estimated construction schedule for temporary work areas.

TABLE 2
Estimated Construction Schedule for Temporary Work Areas
Mariposa Energy Project

Temporary Work Site	Acreage	Date of Initial Disturbance	Construction Completion Date[a]	Restoration Completion Date[b]	Expected Date of Full Function[c]
MEP Laydown	9.2	May 1, 2011	May 1, 2012	June 1, 2012	TBD
MEP Site Cut and Fill Areas	2.9[d]	April 1, 2011	February 1, 2012	March 1, 2012	TBD
Gas Line Corridor	1.0	July 1, 2011	February 1, 2012	March 10, 2012	July 1, 2012
Transmission Line Corridor	8.5	August, 1, 2011	March 1, 2012	April 1, 2012	August 1, 2012
Water Line Corridor	2.6	January 1, 2011	May 1, 2011	June 1, 2011	December 1, 2011

Notes:

[a] Date when all major construction activities have been completed allowing restoration to begin.

[b] Date when all construction related debris, materials, and equipment have been removed from the work site, and when recontouring and reseeding is complete.

[c] Date when the site is expected to match pre-construction condition. Preconstruction condition includes either California annual grassland, roadside ruderal habitat, and/or agricultural development.

[d] This acreage also includes the temporary construction access required adjacent to the north end of the site for initial site access and earthwork construction.

TBD = To Be Determined during Post-Restoration Monitoring

Listed Species Effects, Conservation Measures, and Offsite Compensation

2.1 Listed Species Effects

Table 3 below lists the temporary and permanent effects of the Project on Branchiopods, California red-legged frog, California tiger salamander, and San Joaquin kit fox suitable habitats.

TABLE 3
Maximum Project Effects on Listed Species Habitat
Mariposa Energy Project

Habitat	Disturbance Type	Acreage of Temporary Affect	Acreage of Permanent Affect
Listed Branchiopod aquatic sites within 250 feet of work areas	Potential direct effects to water quality	**0.20**	**-**
Branchiopod pool (SWL-1)	Cut and fill grading, construction access	**0**	**0.018**[a]
	Total	**0.20**	**0.018**
California red-legged frog and California tiger salamander upland habitat; San Joaquin kit fox foraging habitat and potential denning	MEP Site	2.9[b]	9.7
	MEP Main Access Road	0	0.4[c]
	MEP Laydown Yard	9.2	0
	Natural Gas Line	1.0	0
	230-kV Transmission Line	8.5[d]	0.01[e]
	Water Supply Line	2.6[f]	0.006[g]
	Total	**24.2**	**10.1**

Notes:

[a] Direct fill of SWL-1 as a result of grading and excavation activities at MEP site.

[b] Cut and fill areas, temporary access areas adjacent to the northern portion of the MEP site, and portion of new access road. Note the total project cut/fill area is 3.6 acres, but to prevent double-counting, 1.3 acres of cut/fill overlapping with the 9.2 acre laydown area is not included in this tally.

[c] First 816 feet of 20-foot wide MEP access road overlaps with an existing 10-foot wide gravel road. Remaining 431 feet occurs in undisturbed annual grassland (0.4 acres = [816 feet x 10 feet] + [431 feet x 20 feet].

TABLE 3
Maximum Project Effects on Listed Species Habitat
Mariposa Energy Project

Habitat	Disturbance Type	Acreage of Temporary Affect	Acreage of Permanent Affect

[d] The construction zone is 100 feet wide by 0.8 mile long; includes negligible area of Kelso Road.

[e] Footprint of eight new transmission line monopoles.

[f] The habitat acreage (2.6 acres) represented by: annual grassland (20 feet width x 1,000 foot length [this is conservative as the pipeline corridor will overlap with the access road]); roadside ruderal (10 feet width x 1.4 miles) and agricultural (20 feet wide x 1,000 foot length).

[g] Footprint of new 250 square foot pump house at Canal 45.

2.2 Listed Branchiopods

The following conservation measures will be implemented during project construction:

- A USFWS-approved biological monitor will administer a construction personnel education program, explaining to construction personnel how best to avoid the accidental take of listed branchiopods.
- A biological monitor will be onsite during all ground-disturbing work within 250 feet of potential branchiopod habitat.
- Construction work areas including any off-road access routes will be clearly flagged and marked. Potential listed branchiopod habitat in the action area will be marked for avoidance.
- A USFWS-approved biological monitor will oversee all off-road vehicle access for the proposed project.
- Ground disturbance related to the offsite facilities within 250 feet of listed branchiopod habitat will be conducted during the dry season to the extent feasible, which typically occurs from April 15 to October 15.

The potential for adverse effects to water quality in habitats potentially occupied by listed branchiopods will be significantly minimized, and possibly avoided, by the enforcement of seasonal restrictions and implementation of temporary BMPs such as those outlined in the California Stormwater Quality Association's Construction Handbook (California Stormwater Quality Association, 2003). Mariposa Energy's SWPPP and erosion control BMPs will be used to minimize any wind- and water-related erosion and sedimentation, and restore temporarily disturbed areas as quickly as possible to pre-project conditions. Protective measures will also include the following:

- No discharge of pollutants from vehicle and equipment cleaning, maintenance, or repair will be allowed into storm drains, wetlands, or water courses.

- No discharge of sediment-laden water from project-related work will be allowed into storm drains, wetlands, or water courses.
- Vehicle and equipment fueling and maintenance operations will be kept at least 200 feet from vernal pools and other aquatic habitats.
- Dust control will be implemented, including the use of water trucks to control dust in disturbed areas, rocking of temporary access road entrances and exits, and placement of geotextile mats and rock on access road areas to be used in the wet season.
- Erosion and sedimentation control devices (such as silt fences and fiber rolls) will be implemented as necessary during the wet season and before forecasted rain events.
- Disturbed work areas will be restored to pre-project conditions and will be reseeded, as appropriate.

2.3 California Red-legged Frog and California Tiger Salamander

The following measures will be implemented to avoid and minimize effects of the proposed project on the California red-legged frog and California tiger salamander:

- **Wildlife exclusion fence.** Before project construction, a wildlife exclusion fence will be installed along the entire perimeter of the 10-acre MEP site, 9.2-acre temporary laydown area, and along the main access road and temporary construction access area serving the site from Bruns Road. The exclusion fence around these work areas will remain in place for the duration of ground disturbance. The wildlife exclusion fence will be tall enough to discourage dispersal of California red-legged frogs and California tiger salamanders into the active work site. Any damage or gaps in the fence observed during routine inspections will be repaired immediately. A wildlife exclusion fence will generally not be needed along the offsite linear work corridors because this work will occur under the direct supervision of a USFWS-approved biologist(s). Exclusion fencing will be used for project features near aquatic areas, such as the drainages along the water supply pipeline route.
- **Construction monitoring and removal of California red-legged frogs and California tiger salamanders from the work area.** At least 15 days before any construction-related activities, Mariposa Energy will submit to USFWS the name(s) and credentials of biologist(s) who will conduct activities specified in the following measures. No project construction will begin until Mariposa Energy has received written approval from USFWS that the biologist(s) is qualified to conduct the work.
  - Before any removal or disturbance of vegetation, the USFWS-approved biologist(s) will conduct surveys for California red-legged frogs and California tiger salamander in and near the work area. Any California red-legged frogs or California tiger salamanders detected in the work area will be captured and transported immediately in a cool, moist container to a suitable location elsewhere within the local watershed, following the methodology described in Attachment A. A qualified biologist in consultation with USFWS and CDFG will determine the means of capture and handling of the frogs and salamanders and the location of the relocation site in advance; these details will be outlined in an agency-approved capture and relocation plan. The relocated frog(s) and

salamander(s) will be monitored until it is determined that no imminent danger to the animal(s) is apparent.

- The proposed project will avoid small mammal burrows that provide suitable refugia for California red-legged frogs and California tiger salamanders to the extent feasible. If damage to burrows is determined necessary, a USFWS-approved biologist(s) will search the burrows for frogs and salamanders. The end of each burrow will be reached by use of fiber optic peeper scope and excavation by hand or small machinery. If small machinery is warranted, only a mini excavator or similar machine equipped with a small bucket (for example, Bobcat) will be used to carefully dig out the burrow under the direct and close supervision of the USFWS-approved biologist. Burrows will be collapsed only after all frogs and salamanders and any other special-status species have been removed, if present.
- Following the preconstruction surveys and any necessary frog and salamander relocation, the approved biologist will then monitor the work in question (for example, vegetation removal or construction) to minimize the potential for frogs and salamanders to enter the work area and to capture any frogs and salamanders that may be present.
- At the MEP site and adjacent temporary laydown and parking area, the USFWS-approved biologist(s) will be present each day during ground-breaking activities until the wildlife exclusion fence is installed and all suitable habitats are removed. Thereafter, the biologist will conduct weekly site visits of the MEP site and laydown yard to survey the wildlife exclusion fence for good repair as well as for other monitoring duties. The frequency of monitoring maybe increased if the approved biologist believes that there is a heightened threat to California red-legged frog or California tiger salamander, for example during the wet season when frogs and salamanders are more active and moving around. Monitoring along the offsite linear facilities will occur at all times during ground disturbance. If work associated with the offsite facilities is suspended for more than 15 days (for example, between initial removal of vegetation and the initiation of construction), preconstruction surveys will be conducted again before construction activity resumes.

- **Avoidance of entrapment.** To prevent inadvertent entrapment of California red-legged frogs, California tiger salamanders or other animals during construction, at the end of each work day, all excavated, steep-walled holes or trenches inside any work area more than 2 feet deep will be covered with plywood or similar materials or will be equipped with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, the onsite biologist or construction personnel trained by the biologist will thoroughly inspect the trench or hole for trapped animals. If, at any time, a trapped California red-legged frog or California tiger salamander is discovered, USFWS and/or CDFG will be contacted. The capture and relocation plan will be implemented for any entrapped frogs or salamanders.
- **Onsite construction personnel education program.** A construction personnel education program will occur before the start of construction so that the USFWS-approved biologist can explain to construction personnel how best to avoid the accidental take of California red-legged frogs and California tiger salamanders. The training session will be mandatory for contractors and all construction personnel. The meeting will cover species identification,

life history descriptions, habitat requirements during various life stages, and the species' protected status, and will explain the authority of the biological monitor to stop work if imminent danger to a listed species is likely. The biologist will emphasize the importance of the habitat and life-stage requirements within the context of project conservation measures. This training may be delivered by trained construction personnel via a prerecorded video presentation to allow for repeated training sessions for new site workers. Handouts, illustrations, photographs, or project maps that show the areas where conservation measures are being implemented will be included as part of this education program. In addition, wallet-sized cards that include a general reporting protocol and contact information for the biological monitor will also be provided to construction personnel. The program will increase contractors' and construction workers' awareness of federal and state laws regarding endangered and threatened species, as well as increase compliance with conditions and requirements of both Mariposa Energy and resource agencies.

- **Procedure for California Red-legged Frog and California Tiger Salamander discovery onsite.** If construction personnel encounter a California red-legged frog, California tiger salamander, or any amphibian that construction personnel believe may be a frog or salamander, or if any contractor or employee inadvertently kills or injures a California red-legged frog or California tiger salamander, the following protocol will be followed:
  - All work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease.
  - The construction manager will be immediately notified.
  - The construction manager will notify the approved onsite biologist.
  - The approved onsite biologist will move the frog to the previously approved relocation area identified in the agency-approved capture and relocation plan.
  - The biologist will contact USFWS within 24 hours for further direction if a California red-legged frog or California tiger salamander is found, killed, or injured. Field survey forms will be completed for any frog or salamander observations and submitted to the CNDDB.
- **Construction area delineation.** Before any ground is disturbed, the boundaries of the work area will be clearly delineated with orange-colored plastic construction fencing (ESA fencing), signage, or other appropriate means to discourage workers or equipment from inadvertently straying offsite.
- **Burrow Refugia Avoidance.** Concentrations of California ground squirrel burrows will be marked for avoidance by installing exclusion fence around them, or by placing plywood over the burrows protecting them from being crushed by machinery and vehicles or from being filled by trenching spoils.
- **Trash removal.** To discourage attracting predators of protected species, all food-related trash items, such as wrappers, cans, bottles, and food scraps, will be disposed of in solid, closed containers (trash cans) on a daily basis. Onsite trash receptacles will be emptied as necessary (for example, weekly) to prevent overflow of trash. Trash removed from the receptacles will be hauled to an offsite waste disposal facility.

- **Avoidance of accidental spills and a spill response plan.** All fueling and maintenance of vehicles and other equipment and staging areas will occur at least 200 feet from any water body. Spill response materials will be kept onsite at all times. Before work begins, Mariposa Energy will ensure that a plan has been prepared to allow a prompt and effective response to any accidental spills. During the worker education program, all workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.
- **Implementation of BMPs.** To control erosion during and after project implementation, Mariposa Energy will implement BMPs, as required by the California Regional Water Quality Control Board and USACE. More detail on these BMPs will be provided in a SWPPP.
- **Prohibition of use of erosion control materials potentially harmful to California red-legged frogs and California tiger salamander.** Tightly woven fiber netting or similar material will be used for erosion control or other purposes at the project to avoid trapping California red-legged frogs and California tiger salamanders. This limitation will be communicated to the contractor through use of special provisions included in the bid solicitation package. Plastic mono-filament netting (erosion-control matting and fiber rolls) will not be used because the frogs and salamanders may become entangled or trapped in this material.

2.4 San Joaquin Kit Fox

Although no evidence of kit fox denning has been observed in the action area, the numerous ground squirrel burrows provide potentially suitable den sites. Therefore, measures related to the protection of San Joaquin kit fox dens are proposed in the event that an active den is discovered during preconstruction surveys. In addition, measures to protect individual San Joaquin kit fox are proposed in the event that a fox enters a work area during construction. These measures are derived from the *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or during Ground Disturbance* USFWS (1999c) and include:

- **Onsite Construction Personnel Education Program.** The USFWS-approved biologist will include discussion of San Joaquin kit fox in the education program.
- **Preconstruction Surveys and Monitoring.** Before project construction begins, a USFWS-approved biologist will conduct a preconstruction survey for San Joaquin kit fox dens. The following measures will be implemented for any natal/pupping dens, active dens (non-natal), and potential dens observed during the survey:
  - Natal/pupping dens will be avoided and USFWS contacted for further guidance. Natal/pupping dens will not be disturbed by the proposed project.
  - Non-natal dens in the action area will be monitored for 3 days with a tracking medium to determine their current use. If no kit fox activity is observed during this period, the den will be destroyed immediately to prevent future use by kit fox. If kit fox activity is observed at the den during this period, the den will be monitored for at least 5 consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Use of the den will be discouraged during this

period by partially plugging its entrance(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied will it be excavated under the direction of the biologist. If the animal is still present after 5 or more consecutive days of plugging and monitoring, the den will be excavated when, as determined by the biologist, it is temporarily vacant (for example, during the fox's normal foraging activity).

  - Potential dens will be temporarily marked for avoidance and further studied by the qualified biologist. Destruction of potential dens will occur only after the biologist determines that no kit fox are inside. To determine the presence of kit foxes, the potential den will be fully and carefully excavated to the end by either hand or machinery. Once determined empty, the den will be filled with dirt and compacted to ensure that kit foxes cannot enter or use the den during the construction period. If any potential den is determined to be currently or previously used by kit fox, the measures described above for natal and non-natal dens (as applicable) will be followed.

- **Procedure for San Joaquin Kit Fox Discovery Onsite.** If construction personnel encounter a San Joaquin kit fox or any animal that construction personnel believe may be San Joaquin kit fox, or if any contractor or employee inadvertently kills or injures a San Joaquin kit fox, the following protocol shall be followed:

  - All work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease.
  - The construction manager will be immediately notified.
  - The construction manager will notify the USFWS-approved onsite biologist.
  - The animal will be allowed to leave the site on its own.
  - If a San Joaquin kit fox has been killed or injured, the biologist will contact USFWS and CDFG within 24 hours.

- **Construction Area Delineation.** Before any ground is disturbed, the boundaries of the work area will be clearly delineated with orange-colored plastic construction fencing (ESA fencing), signage, or other appropriate means to discourage workers or equipment from inadvertently straying offsite.

- **Trash Removal.** To discourage attraction to predators of protected species, all food-related trash items, such as wrappers, cans, bottles, and food scraps, will be disposed in solid, closed containers (trash cans) on a daily basis. Onsite trash receptacles will be emptied as necessary (for example, weekly) to prevent overflow of trash. Trash removed from the receptacles will be hauled to an offsite waste disposal facility.

- **Speed Limit.** Project-related vehicles will observe a 15-mile-per-hour speed limit in all project areas, except on county roads and state highways.

- **Avoidance of Entrapment.** To prevent inadvertent entrapment of San Joaquin kit fox or other animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered at the end of each working day using plywood or similar materials, or one or more escape ramps will be constructed using earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for

trapped animals. If, at any time, a trapped San Joaquin kit fox is discovered, USFWS and CDFG will be contacted.

- **Capping/Inspection of Pipes.** Because San Joaquin kit fox are attracted to den-like structures such as pipes and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures greater than 4 inches in diameter that are stored at a construction site overnight will be either securely capped before storage or will be thoroughly inspected for San Joaquin kit fox before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a San Joaquin kit fox is discovered inside a pipe, then that section of pipe will not be moved. The USFWS-approved biologist will immediately contact USFWS and CDFG to determine the appropriate course of action, which may include moving the pipe under the direct supervision of a biologist to remove it from the construction area and allow the fox to escape.

2.5 Offsite Compensation

Mariposa Energy has identified the proposed Mountain House Mitigation Bank for their Project mitigation needs. The 144-acre property is located immediately west of the MEP parcel, with Bruns Road as its eastern border. The property supports suitable habitat for San Joaquin kit fox, California red-legged frog, California tiger salamander, burrowing owl, and vernal pool fairy shrimp (Fletcher, 2010; CNDDB, 2010). Other special-status species that are known to exist at the bank site are Swainson's hawk (*Buteo swainsoni*) and burrowing owl (*Athene cunicularia*). Based on discussions with CDFG and USFWS, the property is not expected to be approved as a mitigation bank prior to construction activities beginning for MEP. Because of the close proximity of the proposed Mountain House Mitigation Bank to the MEP site, very similar habitat quality, and the lack of agency-approved mitigation banks covering the necessary species for the MEP location, Mariposa Energy proposes to mitigate project impacts at this future bank, despite the potential timing gap between project construction activities and mitigation bank approval. Mariposa Energy proposes to purchase credits from Mountain House Mitigation Bank within a period not to exceed 18 months following commencement of construction, and will provide financial assurance through a letter of credit to CDFG prior to beginning construction (or by other means if required by CDFG, USFWS, or CEC). The funding level of the financial assurance will be based on the higher of either the expected costs to fully mitigate the total project impacts at the Mountain House Mitigation Bank, or an alternate mitigation strategy as discussed below.

The proposed Mountain House Mitigation Bank is owned by Fletcher Conservation Properties, an experienced mitigation bank owner and operator. At this time no concerns have been raised about the likelihood of agency approval of the bank; however, Mariposa Energy is continuing to evaluate alternate mitigation options will be prepared to act on them to ensure a mitigation agreement will be fully implemented within the time frame discussed above. Mariposa Energy is evaluating local opportunities to obtain a suitable non-bank property through purchase or easement to accomplish mitigation goals for the project. This would require Mariposa Energy to develop a conservation management plan and establish an endowment for ongoing management of the property. Opportunities may exist on the Mountain House Mitigation Bank parcel, should the proposed bank development process not proceed for an unforeseen reason.

Additionally, Mariposa Energy is tracking other potentially suitable mitigation properties in northeastern Alameda County.

Another mitigation option currently being evaluated is to participate in the East Contra Costa County Habitat Conservation Plan and Natural Communities Conservation Plan (HCP/NCCP). Mariposa Energy recently received feedback from USFWS that this may be a suitable mitigation option for MEP; further discussion with CDFG, CEC, and the Contra Costa County Community Development Department will be required to assess the viability of participating in the HCP/NCCP program to meet project mitigation requirements.

The financial assurance required prior to project construction will be at a sufficient level to cover the purchase of credits at the Proposed Mountain House Mitigation Bank or an alternate strategy, including either 1) land acquisition, development of a management plan, endowment, and potential enhancement of a private mitigation parcel, or 2) participation in the East Contra Costa County HCP/NCCP if determined to be a viable option. Mariposa Energy will coordinate with CDFG, CEC, and USFWS to further discuss these options and to determine appropriate financial assurance levels to conservatively cover non-bank mitigation options.

Table 4 below summarizes the offsite compensation totals for the project. Further clarification of offsite compensation for listed species is clarified further below.

TABLE 4
Compensation Ratios and Offsite Compensation Acres
Mariposa Energy Project

Species	Ratio[a]	Long-term Temp. Affects [Comp. Acre]	Permanent Affects [Comp. Acre]
Listed Branchiopods	3:1	None	0.018 [0.054]
San Joaquin kit fox	3:1	NA	10.1 [30.3]
San Joaquin kit fox	1:1	12.1 [12.1]	NA
California red-legged frog	3:1	NA	10.1 [30.3]
California red-legged frog	1:1	12.1 [12.1]	NA
California tiger salamander	3:1	NA	10.1 [30.3]
California tiger salamander	1:1	12.1 [12.1]	NA

Note:

[a] No compensation is proposed for short-term temporary effects to species habitat, as the affected area will be functional within 12 months of disturbance. Long-term temporary effects (that may exceed 12 months of from initial disturbance to restored and functional) will be compensated offsite at 1:1 in addition to onsite restoration. Permanent effects will be compensated offsite at 3:1.

2.5.1 Vernal Pool Fairy Shrimp and Longhorn Fairy Shrimp

Permanent loss of listed Branchiopod habitat at SWL-1 will be compensated offsite at a ratio of **3:1** (habitat preservation). Therefore, 0.054 acres of vernal pool fairy shrimp habitat will be preserved and protected in perpetuity at the Mountain House Mitigation Bank. An alternate

mitigation bank for listed Branchiopods is the Fitzgerald Ranch Conservation Bank, which is USFWS-approved and located in San Joaquin county. Although the Project is not within the bank's vernal pool service area, there are no other known mitigation banks in the Livermore Vernal Pool Region where the Project affect occurs. The Fitzgerald Ranch bank service area ends at the San Joaquin – Alameda county line, located less than 3 miles east of the Project. Ms. Kim Squires of the USFWS confirmed during a meeting held at CH2M HILL on August 12, 2010 that Mariposa Energy is approved to use Fitzgerald Ranch Conservation Bank for fairy shrimp mitigation if necessary.

2.5.2 California Red-legged Frog and California Tiger Salamander

Loss of California red-legged frog and California tiger salamander habitat will be compensated as follows:

- The approximately 12.1acres (see Table 3) of frog and salamander dispersal and upland refugia temporarily lost during construction of the natural gas line (1 acre), transmission line (8.5 acres), and water supply line (2.6 acres) will be restored to pre-project conditions within a single construction season, therefore no offsite compensation is required (Kim Squires, 2009, USFWS, personal communication with Todd Ellwood).

- The 12.1 acres (see Table 3) of frog and salamander dispersal and upland refugia temporarily lost due to long-term temporary habitat loss (greater than 1 year) of the MEP temporary laydown area, MEP cut and fill area, temporary access areas adjacent to the northern portion of the MEP site, and portion of new access road will be compensated at a **1:1 ratio** (offsite preservation of grassland habitat supporting or near known breeding sites). Thus, preservation of 12.1 acres of upland habitat will occur at a suitable offsite location determined in coordination with USFWS and CDFG.

- Permanent loss of 10.1 acres (see Table 3) of frog and salamander dispersal and upland refugia during construction and operation of the MEP site and new transmission line will be compensated at a **3:1 ratio** (offsite preservation of grassland habitat supporting or near known California tiger salamander and California red-legged frog breeding sites). Thus, 30.**3** acres of California red-legged frog and California tiger salamander upland habitat will be preserved at a suitable offsite location determined in coordination with USFWS and CDFG.

Full restoration of functional frog and salamander upland habitat in the temporary disturbance area is expected to occur in approximately one year or slightly longer, depending on the construction schedule, initial revegetation success rate, and ground squirrel recolonization rate. Mariposa Energy proposes the 1:1 (offsite habitat preservation) compensation ratio for the potential long-term temporary habitat loss because of the uncertainty in how quickly these areas will return to functional upland habitat. In additional to ripping to relieve any over-compaction in the laydown area, replacing salvaged topsoil, reseeding, and installation of permanent erosion/sedimentation control BMPs, a 3-year monitoring program will be implemented to document and verify restoration and subsequent achievement of functional habitat in these areas.

2.5.3 San Joaquin Kit Fox

The potential effects of project construction on San Joaquin kit fox will be offset by preservation of offsite upland habitat in perpetuity as close to the action area as possible as follows:

- Temporary loss of 12.1 acres (see Table 3) of San Joaquin kit fox dispersal, foraging, and potential den sites during construction of the offsite facilities will be restored to pre-project conditions within a single construction season, therefore no offsite compensation is proposed. USFWS affirmed this approach (pers. comm. between Kim Squires [USFWS] and Todd Ellwood).
- Temporary loss of 12.1 acres (see Table 3) of San Joaquin kit fox dispersal, foraging, and potential den sites due to long-term temporary habitat loss (greater than 1 year) of the temporary laydown area, MEP cut and fill area, temporary access areas adjacent to the northern portion of the MEP site, and portion of new access road will be compensated at a **1:1 ratio** (offsite preservation of grassland habitat supporting California ground squirrel burrows within the range of kit fox). Therefore, preservation of 12.1 acres of San Joaquin kit fox upland habitat will occur at a suitable offsite location determined in coordination with USFWS.
- Permanent loss of 10.1 acres of San Joaquin kit fox dispersal, foraging, and potential den sites during construction and operation of the MEP site (including access road) and new transmission line will be compensated at a **3:1 ratio** (offsite preservation of grassland habitat supporting California ground squirrel burrows). Therefore, an additional 30.3 acres of San Joaquin kit fox upland habitat will be preserved at a suitable offsite location determined in coordination with USFWS.

2.6 Post Construction Monitoring

Mariposa Energy will endeavor to restore the temporary laydown area, temporary construction access area, and MEP cut and fill areas back to functional habitat within a 12-month period following initial disturbance. Following use of the laydown area, this grassland area will be restored by ripping to reduce compaction, replacement of topsoil, and reseeding. This area will be temporarily irrigated to expedite revegetation. Likewise, the temporary construction access area and cut and fill slopes will be reseeded and temporarily irrigated. Although these work areas will likely be restored to annual grassland within approximately 12 months of initial disturbance, displaced ground squirrels may or may not create new burrows or reestablish existing burrows within the same time frame. A study by Gilson and Salmon (1990) suggests that recolonization by ground squirrel of a disturbed site could occur in a matter of months despite significant burrow destruction.

Mariposa Energy will implement a 3-year monitoring program to track the success of post-construction restoration of grassland California red-legged frog and California tiger salamander refugia habitat. Functional habitat is considered to be annual grassland with a varied density of ground squirrel burrows. Although the Project will impact burrows, or the upper portions of larger burrow complexes in the direct path of disturbance, as many as feasible will be avoided

in the temporary work areas (primarly the linear corridors), protecting them for potential future use by California red-legged frog, California tiger salamander, and San Joaquin kit fox.

Restored grassland areas will be monitored by a qualified biologist annually for up to 3 years or until the restoration area(s) meet the final success criteria. Timing of the post-restoration surveys will coincide with the peak growing season of annual grassland species (May) and the height of the activity period of California ground squirrel. Ground squirrels are most active during their breeding season, which in the Central Valley is typically February through April. Therefore, post-restoration surveys will be conducted late April to early May each year.

Adequate vegetative cover will be determined using the following performance criteria:

- Year 1 – 60 percent of vegetative cover measured at undisturbed reference site adjacent to project site;
- Year 2 – 80 percent of vegetative cover measures at undisturbed reference site adjacent to project site; and
- Year 3 – 90 percent of vegetative cover measures at undisturbed reference site adjacent to project site.

Revegetation reference sites will be selected in areas that will not be disturbed by the Project. The areas selected as references sites will have the similar cover, density, and species composition as the areas to be impacted.

The 3-year monitoring program will also track the success ground squirrel have digging new burrows and/or reestablishing existing burrows in the laydown area, temporary construction access area, and cut/fill area. No published data were identified that suggest quantitative burrow density requirements for upland refugia. Jennings and Hayes (1994) refers to "sufficient" burrow density as a qualitative standard; therefore, the annual results will be analyzed by a qualified biologist and discussed with USFWS, CDFG, and CEC to determine mutually if the site provides functional upland refugia.

If performance criteria for restoration of upland refugia are not met, Mariposa Energy proposes to implement the following remedial measures:

- Areas that do not meet revegetation criteria will be reseeded. If necessary, the seed mix will be modified to substitute other grass species to improve success;
- Temporary erosion control measures including silt fences, erosion control blankets, and fiber rolls will be installed as necessary to prevent any observed erosion until remedial seeding measures are fully implemented; and
- If an the end of 3 years a sufficient number of upland refugia is not achieved, Mariposa Energy will work with the USFWS, CDFG, and CEC on the appropriate remedial measures, with may include creation of artificial burrows, additional offsite compensation, or other appropriate measures.

Monitoring reports documenting restoration of the Project restoration areas will be submitted to the USFWS, CDFG, and CEC upon completion of the restoration implementation and by December 31 of each year following the monitoring period. All monitoring reports will include the following information:

- Names, titles, and affiliations of all persons who prepared the report and conducted field work.
- Summaries of all monitoring data, including percent cover estimates, sign of ground squirrel use, and location and distribution of new and reestablished small mammal burrows.
- Electronic or color-copies of photo-documentation to illustrate monitoring results.
- Maps showing the monitoring area.
- Remedial action recommendations, as needed.

Following the completion of Year 3 monitoring (or sooner if performance criteria have been met), Mariposa Energy will submit a final monitoring report and notify the agencies whether or not the Project has successfully met the final performance criteria. This report will describe how and when all performance criteria were met and will request a confirmation of project completion from the USFWS, CDFG, and CEC.

References

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United States Fish and Wildlife Service (USFWS). 1999c. *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance*. Prepared by the Sacramento Fish and Wildlife Office. June 1999.

California Natural Diversity Database (CNDDB). 2010. *Rarefind*. California Department of Fish and Game.

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Jennings, M.R., and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA.

ATTACHMENT 2

CALIFORNIA TIGER SALAMANDER AND CALIFORNIA RED-LEGGED FROG CAPTURE AND RELOCATION PLAN

California Red-legged Frog and California Tiger Salamander Capture and Relocation Plan for the Mariposa Energy Project

PREPARED FOR: Mariposa Energy LLC

PREPARED BY: CH2M HILL

DATE: September 5, 2010

California tiger salamander and California red-legged frog encountered during project construction will be treated on a case-by-case basis in coordination with the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG). In general, the following will occur under the direction of the MEP construction biological monitor:

1. Leave the non injured animal if it is not in danger;
2. Move the animal to a nearby location if it is in danger; or
3. Take the animal into custody for educational outreach and/or scientific research if the first two options are unavailable.

These three options are further described below.

1. Leave the non injured animal if it is not in danger

When a California red-legged frog or California tiger salamander is encountered in the work area the first priority will be to stop all activities in the surrounding area that have the potential to result in take of the individual. The biological monitor will then assess the situation in order to select an appropriate course of action that will minimize the effects to the individual. Once the site is secure, Mariposa Energy will contact the USFWS at (916) 414-6600 for further direction. If a California tiger salamander is encountered, Mariposa Energy will also contact the CDFG at (707) 944-5500.

The first priority will be to avoid contact with the frog or salamander and allow it to move out of the work area and danger on its own to a safe location. The animal will not be picked up and moved. This guidance only applies to situations where a frog or salamander is encountered on the move during conditions that make their upland travel feasible (which is usually during the wet season). This does not apply to frogs or salamanders that are uncovered or otherwise exposed or in areas where there is not sufficient adjacent habitat to support the life history of the animal should they move outside the construction footprint.

Avoidance is the preferred option if the frog or salamander is not moving and is using aquatic habitat or is within some sort of burrow or other refugia. The area should be well marked for avoidance and a USFWS- and CDFG-approved biological monitor should be assigned to the area when work is taking place nearby.

2. Move the animal to a nearby location if it is in danger

The above options will not always be feasible and sometimes capturing and moving the animal is the only option to prevent its death or injury. Two proposed release sites have been identified for California red-legged frog and California tiger salamander, as shown on Figure 1. All releases will be coordinated with the USFWS and/or CDFG. In most situations the release location will likely to be into the mouth of a small burrow or other suitable refugia and in certain circumstances pools without non-native predators may be suitable. No animal will be relocated to another property without the owner's written permission, arranged for by Mariposa Energy.

The preferred release site is owned by CDFG, called the Byron Conservation Bank. The CDFG property supports known breeding populations of both frog and salamander. A series of breeding pools occurring along an intermittent drainage would be suitable release locations for California red-legged frog. A salamander breeding pond recorded in the California Natural Diversity Database (CNDDB) and the surrounding small mammal burrows located near the southeast corner of the property would be a suitable release location for California tiger salamander. Access to the Bank property would be closely coordinated with CDFG each time a frog or salamander is released.

An alternate release site for frog and salamander would be the proposed Mountain House Mitigation Bank property (Figure 1). The property is privately owned by Mr. Robert Fletcher, who is currently developing it as a special-status species mitigation bank. Potentially suitable frog aquatic breeding and aquatic non-breeding habitat occurs onsite along an onsite intermittent drainage (Figure 1). This drainage would be the release site for the frog. The property is known to support breeding habitat of California tiger salamander, as recorded in the CNDDB (see Figure 1, southern pond). The two onsite stock ponds, including the surround burrow refugia, would be the release locations for salamander. Access to the property would be closely coordinated with Mr. Fletcher, or his appointee, each time a frog or salamander is released.

Several amphibian diseases may be involved in amphibian declines and may be spread by relocating animals. Therefore, due to concerns regarding genetic and health issues and adverse effects to other California red-legged frog and California tiger salamanders, the long distance relocation of frogs and salamanders on this project (i.e., out of the watershed) will not occur.

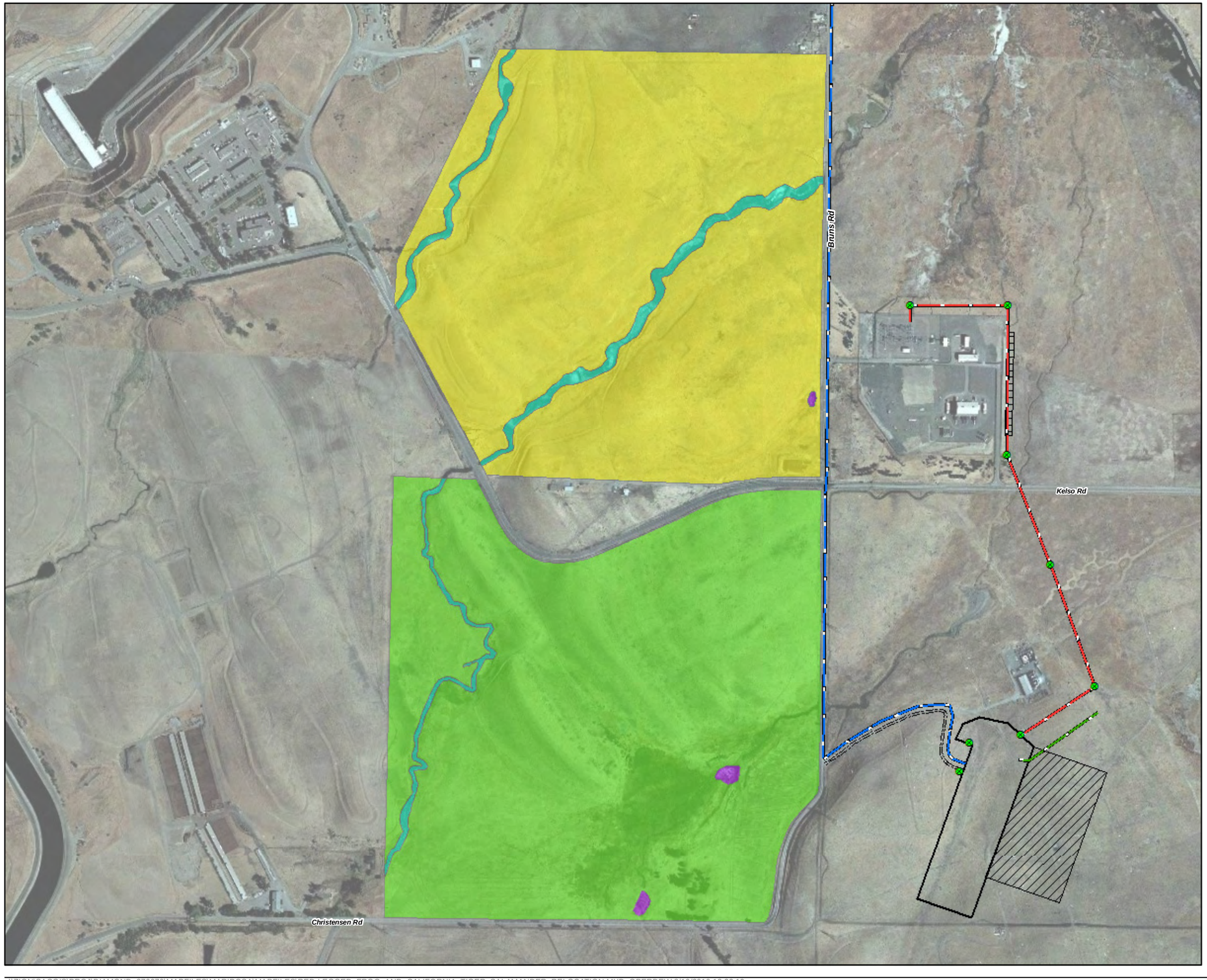
Only USFWS- and CDFG-approved biologists for the project will capture California red-legged frog and California tiger salamanders. Animals will be captured using nets or by hand. Soaps, oils, creams, lotions, repellents, or solvents of any sort will not be used on hands within two hours before and during periods when they are capturing and relocating animals. To avoid transferring disease or pathogens between sites during the course of handling the animals, the biologists will use the following guidance for disinfecting equipment and clothing. These recommendations are adapted from the Declining Amphibian Population Task Force's Code which can be found in their entirety at: http://www.open.ac.uk/daptf/

- All dirt and debris, including mud, snails, plant material (including fruits and seeds), and algae, will be removed from containers, boots, vehicle tires and all other surfaces that have come into contact with water at the relocation site.. Cleaned items will be rinsed with clean water before leaving the relocation site.

- Boots, containers , etc., will then be scrubbed with either a 70% ethanol solution, a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water), QUAT 128 (quaternary ammonium, use 1:60 dilution), or a 6% sodium hypochlorite 3 solution and rinsed clean with water. Cleaning equipment in the immediate vicinity of a pond or wetland will be avoided. All traces of the disinfectant will be removed before re-entering the relocation site.
- Disposable gloves will be worn and changed after handling each animal.
- Used cleaning materials (liquids, etc.) will be disposed of safely, and if necessary, taken back to the lab for proper disposal. Used disposable gloves will be retained for safe disposal in sealed bags.
- USFWS- and CDFG-approved biologists will limit the duration of handling and captivity. While in captivity, individual frog or salamanders will be kept in a cool, dark, moist, aerated environment, such as a clean and disinfected bucket or plastic container with a damp sponge or cloth. Containers used for holding or transporting will not contain any standing water and will be disinfected before reuse.

3. Take the animal into custody for educational outreach and/or scientific research if the first two options are unavailable.

If frogs or salamanders cannot be moved either because of injury or death, the individuals will be used for outreach and/or research. Delivery of individuals to the recipient will be coordinated with the USFWS and CDFG. Unless otherwise directed, frogs and salamanders will be delivered to the Brad Shaffer Lab at the University of California at Davis. Brad and the lab staff can be reached at (530) 752-2939 and hbshaffer@ucdavis.edu.



LEGEND

- POWER POLE LOCATION
- ACCESS ROAD
- NATURAL GAS PIPELINE ROUTE
- TRANSMISSION LINE ROUTE
- WATER SUPPLY PIPELINE ROUTE
- CONSTRUCTION LAYDOWN/PARKING AREA
- TRANSMISSION LINE LAYDOWN AREA
- PROJECT SITE

Frog and Salamander Relocation Sites

- California Department of Fish and Game Byron Mitigation Bank
- California Red-legged Frog Breeding and Aquatic Non-breeding Habitat
- California Tiger Salamander Breeding Habitat
- Proposed Mountain House Mitigation Bank

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

N

0 500 1,000
Feet

FIGURE 1
PROPOSED CAIFORNIA RED-LEGGED FROG AND CALIFORNIA TIGER SALAMANDER RELOCATION SITES

MARIPOSA ENERGY PROJECT
ALAMEDA COUNTY, CALIFORNIA

ATTACHMENT 3

MARIPOSA ENERGY PROJECT, DIRECT AND INDIRECT EFFECTS TO LISTED BRANCHIOPOD HABITAT DURING CONSTRUCTION

Mariposa Energy Project, Direct and Indirect Effects to Listed Branchiopod Habitat during Construction

PREPARED FOR: Mariposa Energy LLC

PREPARED BY: CH2M HILL

DATE: September 5, 2010

When ground disturbance occurs within 250 feet of Branchiopod habitat, there is a potential for both direct and indirect effects to the aquatic habitat. Direct effects include actual ground disturbance within the ponding area or if stormwater laden with sediment or construction materials (for example, fuels and lubricants) discharge into the aquatic site. Dust emissions generated during construction activities settling in Branchiopod habitat would be another form of a direct effect. Indirect effects include changes in the hydrological regime of the aquatic habitat or adjacent buffer lands, if ground disturbance such as excavations or surface grading punctures the typically shallow claypan layer or alters surface flow patterns. During construction of the Project, there is a potential for direct effects to potential branchiopod habitat, but not indirect effects. Excavation and/or grading that could damage underlying claypans or alter surface hydrology will not occur within 250 feet of Branchiopod habitat, with the exception of seasonal wetland 1 (SWL-1), which cannot be avoided during construction activities (see Table 1, #12 and #13). Each Branchiopod site in the project vicinity shown in Figure 1 was assigned an identification number, which corresponds to the habitat description provided in Table 1 below. Figure 1 shows the locations of all suitable Branchiopod habitat within 250 feet of the Project.

With the exception SWL-1, direct effects to Branchiopod habitat will be avoided by the implementation of Best Management Practices (BMPs). Construction perimeter fence (for example, orange snow fence) and/or wildlife exclusion fencing will be installed at the greatest distance feasible from Branchiopod habitat to discourage site workers, vehicles, and construction machinery from straying offsite into the sensitive areas. An onsite biological monitor will also be present to advise all site workers to stay inside approved work areas at all times. Direct effects from the offsite discharge of construction-related contaminated stormwaters and dust emissions generated from moving equipment and vehicles will be prevented by the implementation of standard erosion and/or sedimentation control devices, fugitive dust management, and other BMPs prescribed by the Project's approved Stormwater Pollution Prevention Plan (SWPPP) and Fugitive Dust Mitigation Plan. When feasible, overland travel within 250 feet of Branchiopod habitat will occur during dry weather to significantly minimize the potential for the direct effects from runoff. If this seasonal avoidance cannot be achieved, straw fiber rolls or other appropriate construction BMPs will be installed between the work activity and aquatic feature to provide a barrier to offsite discharge of pollutant-laden stormwater. As-needed dust control measures (e.g., wetting dry ground) will minimize airborne transmission of soil particles into nearby aquatic habitats. Equipment fueling, maintenance, and repairs (other than emergency repairs), in addition to storage of hazardous materials (fuels and lubricants) will occur offsite or greater than 200 feet from nearby Branchiopod habitat,

including in the temporary laydown area. Other hazardous materials handling BMPs, including but not limited to secondary containment and not topping off fuel tanks will be enforced to prevent soil contamination.

TABLE 1
Suitable Listed Branchiopod Habitat within 250 Feet
Mariposa Energy Project

Site Number	Habitat Description	Aquatic Site Area (Acres)	Approx. Distance from Project	Direct and Indirect Effects Mitigation	Other Notes
1	Depressional area inside an alkali swale.	0.029	155 feet	SWPPP BMPs; exclusion fence; no excavation or grading within 250 feet	No Branchiopods observed during site surveys.
2	Seasonal depression in a heavily grazed grassland pasture.	0.013	At project area boundary[a]	SWPPP BMPs; exclusion fence; no excavation or grading within 250 feet	No Branchiopods observed during site surveys.
3	Seasonal wetland in a heavily grazed grassland pasture.	0.007	Inside project area[a]	SWPPP BMPs; exclusion fence; no excavation or grading within 250 feet	Identified as Seasonal Wetland 2 during a formal USACE delineation. No branchiopods observed during site surveys.
4	Vernal Pool	0.033	237 Feet	SWPPP BMPs; exclusion fence; no excavation or grading within 250 feet	No branchiopods observed during site surveys.
5	Vernal Pool	0.018	178 Feet	SWPPP BMPs; exclusion fence; no excavation or grading within 250 feet	No branchiopods observed during site surveys.
6	Vernal Pool	0.007	130 Feet	SWPPP BMPs; exclusion fence; no excavation or grading within 250 feet	No branchiopods observed during site surveys.
7	Vernal Pool	0.026	164 Feet	SWPPP BMPs; exclusion fence; no excavation or grading within 250 feet	No branchiopods observed during site surveys.
8	Shallow seasonal depression in swale	0.006	201 Feet	SWPPP BMPs; exclusion fence; no excavation or grading within 250 feet	No branchiopods observed during site surveys.
9	Shallow seasonal depression in swale	0.007	113 Feet	SWPPP BMPs; exclusion fence; no excavation or	No branchiopods observed during site surveys.

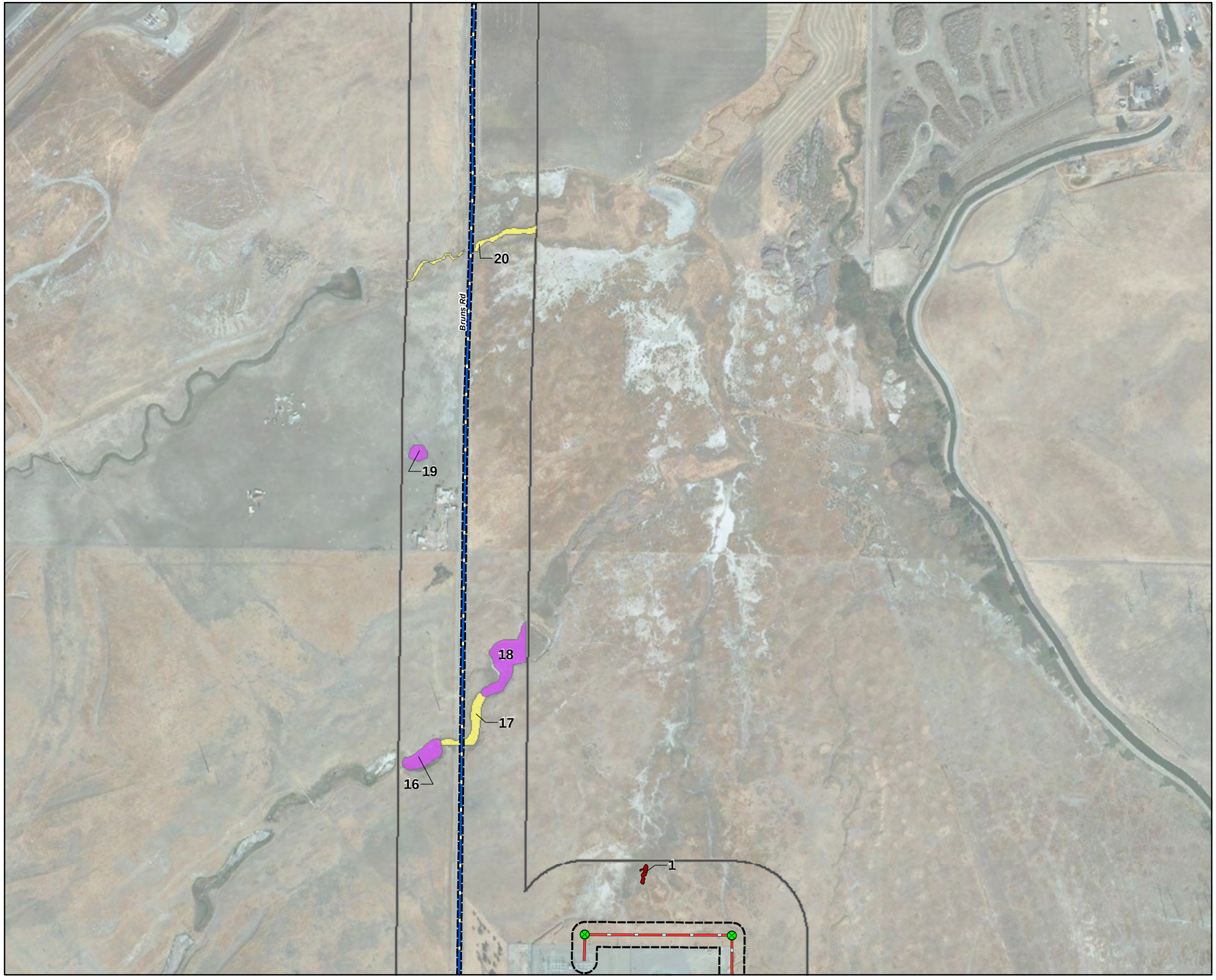
TABLE 1
Suitable Listed Branchiopod Habitat within 250 Feet
Mariposa Energy Project

Site Number	Habitat Description	Aquatic Site Area (Acres)	Approx. Distance from Project	Direct and Indirect Effects Mitigation	Other Notes
				grading within 250 feet	
10	Shallow seasonal depression in swale.	0.022	177 Feet	SWPPP BMPs; exclusion fence; no excavation or grading within 250 feet	Unidentified Branchiopods species observed in 2009. Receives stormwater runoff from the Byron Cogen Power Plant.
11	Constructed stormwater conveyance ditch.	0.027	200 Feet	SWPPP BMPs; exclusion fence; no excavation or grading within 250 feet	Receives stormwater runoff from the Byron Cogen Power Plant.
	Total Area (Potential direct effects)	**0.20**[b]			
12	Seasonal wetland in a roadside swale.	0.011	Within construction footprint	Cannot be avoided, thus offsite mitigation will be provided.	This site is also called Seasonal Wetland 1 (SWL-1) considered jurisdictional by USACE. Unidentified Branchiopods species observed in 2009.
13	Seasonal wetland in a roadside swale.	0.007	Within construction footprint	Cannot be avoided, thus offsite mitigation will be provided.	This site is also called Seasonal Wetland 1 (SWL-1) considered jurisdictional by USACE. No branchiopods observed during site surveys.
	Total Area (Direct effects)	**0.018**			

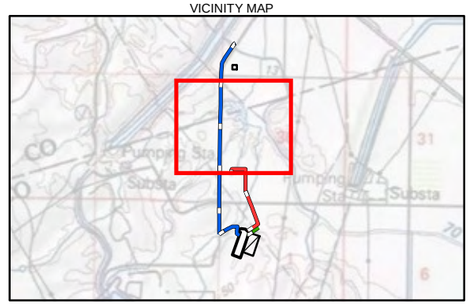
Notes:

[a] Site Numbers 2 and 3 are located at the project work corridor boundary and immediately within the 100-foot corridor, respectively. Direct effects will be avoided by fencing these areas with exclusion fencing and appropriate sediment control BMPs. Work activities within the corridor adjacent to these areas will be limited to necessary vehicle access at the greatest distance feasible (staying as far west as possible). The transmission line construction laydown area identified on project figures will not be used in the area adjacent to these two aquatic areas; the MEP main laydown area will be used for long-term material storage, and equipment will be staged as necessary within other portions of the transmission line work corridor, as directed by the project biologist.

[b] An error was discovered in the calculation of total branchiopod habitat surface area potentially susceptible to project-related indirect effects presented in the BA. In the BA, 0.5 acres (BA Table 6-1) was a miscalculation. The correct acreage of potential indirect effects is 0.20 acres. Also note that 0.20 acres does not include SWL-1 (0.018 acres), as SWL-1 will be permanently affected by the Project.



VICINITY MAP



LEGEND

- NEW POWER POLE LOCATION
- ACCESS ROAD
- NATURAL GAS PIPELINE ROUTE
- TRANSMISSION LINE ROUTE
- WATER SUPPLY PIPELINE ROUTE
- DISTURBANCE AREA
- 250-FOOT PROJECT BUFFER
- CONSTRUCTION LAYDOWN/PARKING AREA
- TRANSMISSION LINE LAYDOWN AREA
- PROJECT SITE
- SUITABLE LISTED BRANCHIOPOD HABITAT
- SUITABLE AQUATIC NON-BREEDING HABITAT (CRLF ONLY)
- SUITABLE AQUATIC BREEDING HABITAT (CRLF AND CTS)

NOTE:

1. **Habitat within 250 feet of Project Area may support longhorn fairy shrimp and vernal pool fairy shrimp.**
2. *** = Branchiopod Habitat areas 2 and 3 will be avoided during construction of the transmission line regardless that they show to be inside the work area cooridor.**
3. **CRLF = California Red-legged Frog**
   CTS = California Tiger Salamander

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

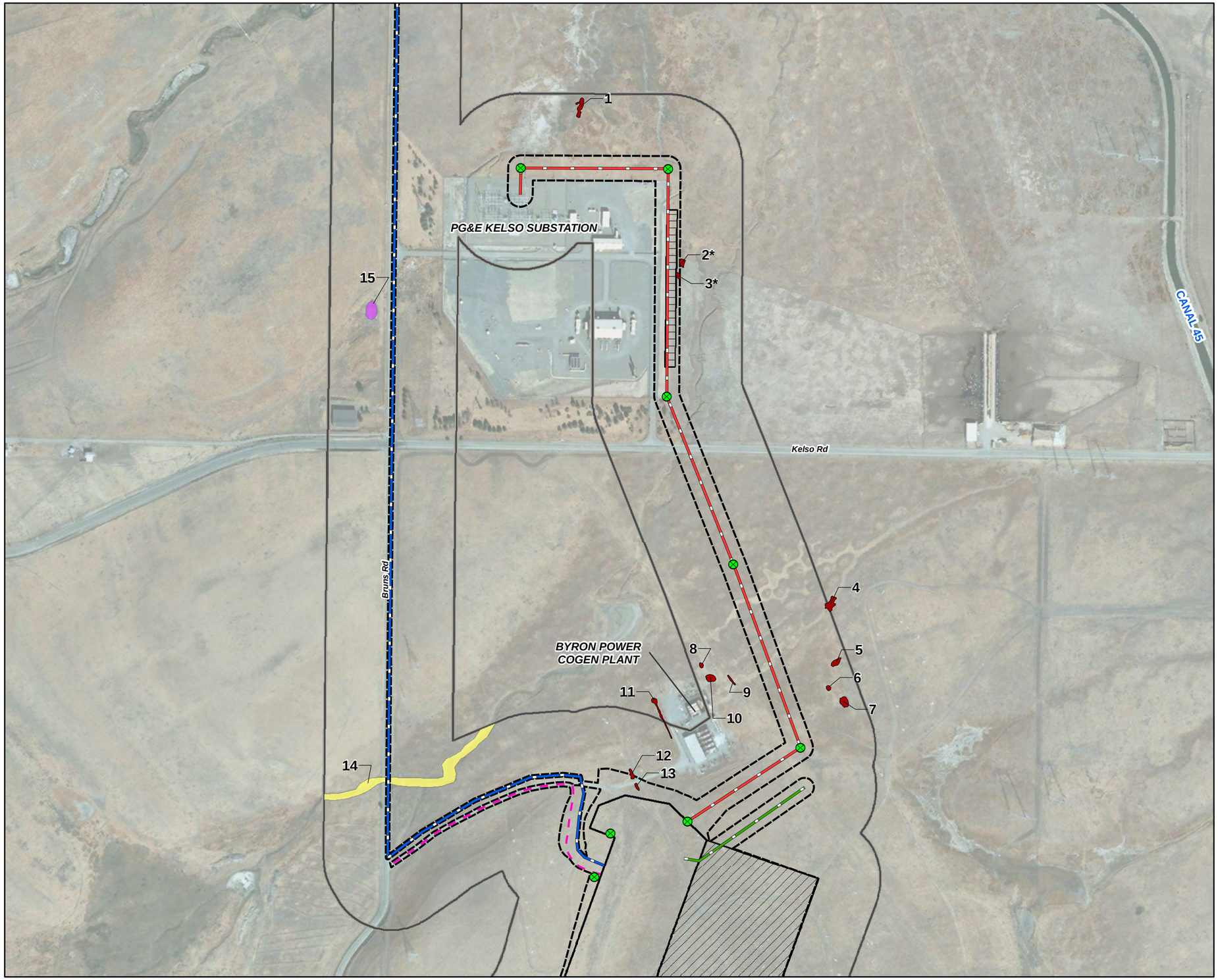
N

0 200 400
Feet

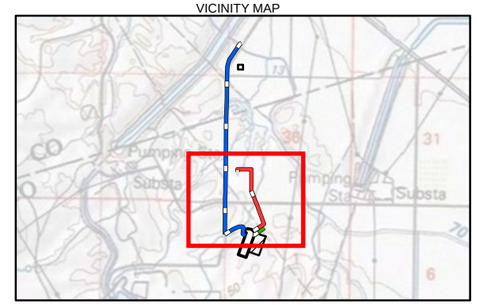
FIGURE 1
SUITABLE AQUATIC HABITATS FOR CALIFORNIA RED-LEGGED FROG, CALIFORNIA TIGER SALAMANDER AND LISTED BRANCHIOPODS WITHIN 250-FEET

MARIPOSA ENERGY PROJECT

ALAMEDA COUNTY, CALIFORNIA



VICINITY MAP



LEGEND

- NEW POWER POLE LOCATION
- ACCESS ROAD
- NATURAL GAS PIPELINE ROUTE
- TRANSMISSION LINE ROUTE
- WATER SUPPLY PIPELINE ROUTE
- DISTURBANCE AREA
- 250-FOOT PROJECT BUFFER
- CONSTRUCTION LAYDOWN/PARKING AREA
- TRANSMISSION LINE LAYDOWN AREA
- PROJECT SITE
- SUITABLE LISTED BRANCHIOPOD HABITAT
- SUITABLE AQUATIC NON-BREEDING HABITAT (CRLF ONLY)
- SUITABLE AQUATIC BREEDING HABITAT (CRLF AND CTS)

NOTE:

1. **Branchiopod habitat within 250 feet of Project Area may support longhorn fairy shrimp and vernal pool fairy shrimp.**
2. **Branchiopod Habitat areas 2 and 3 will be avoided during construction of the transmission line regardless that they show to be inside the work area cooridor.**
3. **CRLF = California Red-legged Frog**
   CTS = California Tiger Salamander

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

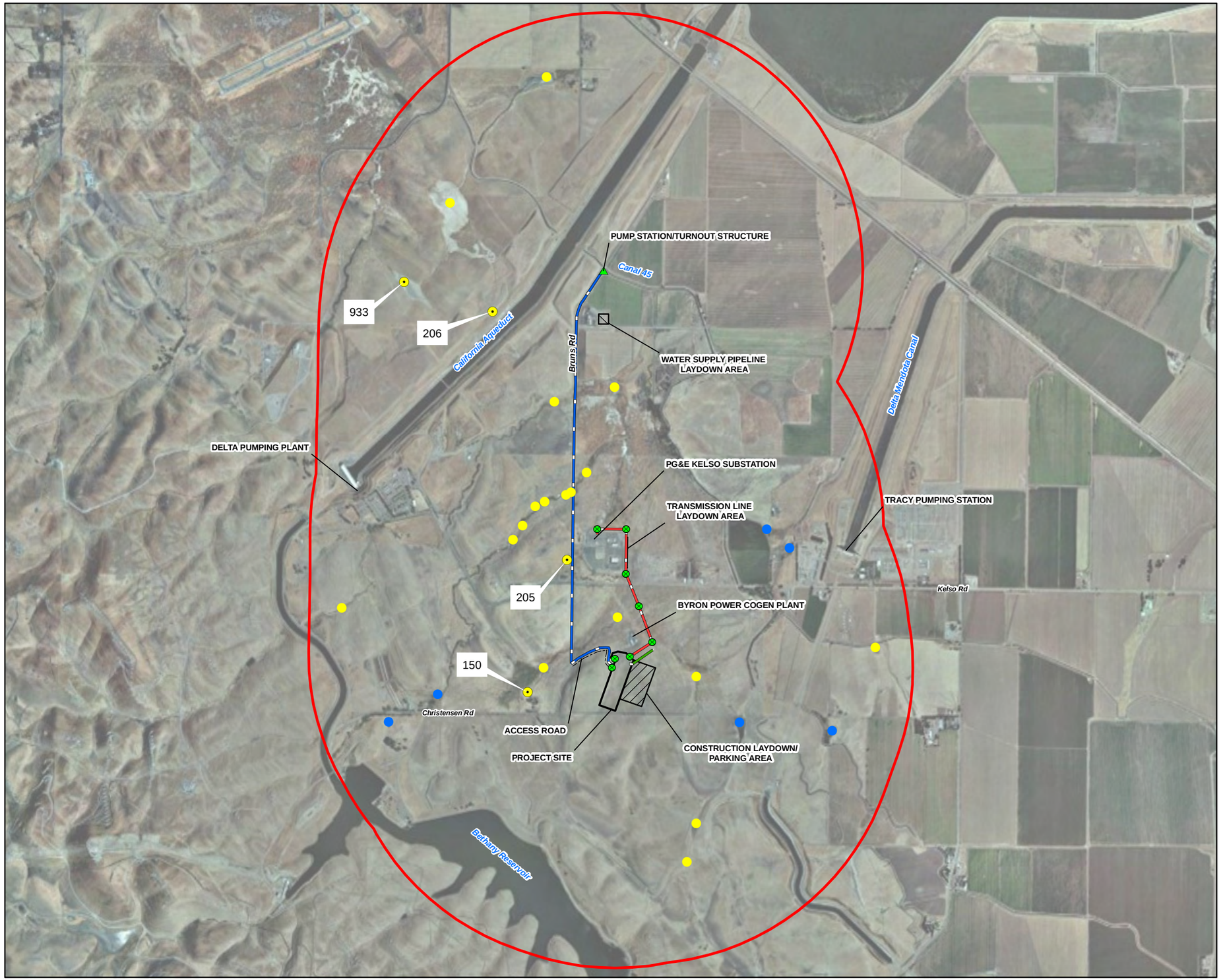
N

0 200 400
Feet

FIGURE 1
SUITABLE AQUATIC HABITATS FOR CALIFORNIA RED-LEGGED FROG, CALIFORNIA TIGER SALAMANDER AND LISTED BRANCHIOPODS WITHIN 250-FEET
MARIPOSA ENERGY PROJECT
ALAMEDA COUNTY, CALIFORNIA

ATTACHMENT 4

FIGURE 1 SHOWING POTENTIAL CALIFORNIA TIGER SALAMANDER BREEDING SITES WITHIN 1 MILE (1.6KM) OF MEP



LEGEND

- POWER POLE LOCATION
- PUMP STATION/TURNOUT STRUCTURE
- ACCESS ROAD
- NATURAL GAS PIPELINE ROUTE
- TRANSMISSION LINE ROUTE
- WATER SUPPLY PIPELINE ROUTE
- CONSTRUCTION LAYDOWN/PARKING AREA
- TRANSMISSION LINE LAYDOWN AREA
- WATER SUPPLY PIPELINE LAYDOWN AREA
- PROJECT SITE
- 1 MILE (1.6 km) REFERENCE LINE FROM PROJECT

KNOWN & POTENTIALLY SUITABLE BREEDING HABITAT

- EPHEMERAL POND
- PERENNIAL POND
- CNDDB KNOWN BREEDING HABITAT

SOURCE: Pond sites tagged with identification number queried from CNDDB (March 2010). All other pond sites identified during survey of satellite imagery and have not been field verified.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

N

0 2,000 4,000

Feet

FIGURE 1
CALIFORNIA TIGER SALAMANDER BREEDING WITHIN 1 MILE (1.6 km) OF PROJECT
MARIPOSA ENERGY PROJECT
ALAMEDA COUNTY, CALIFORNIA

ATTACHMENT 5

MEP SWAINSON'S HAWK (BUTEO SWAINSONI) SURVEY

MEP Swainson's Hawk *(Buteo swainsoni)* Survey

PREPARED FOR: Mariposa Energy, LLC

PREPARED BY: CH2M HILL

DATE: September 5, 2010

Survey Background

Swainson's hawks are a medium to large raptor that breeds in California, and elsewhere in North America and winters in South America. It is listed by the state of California as a threatened species and is protected by the federal Migratory Bird Treaty Act. California Department of Fish and Game (CDFG) informed Mariposa Energy LLC that a Swainson's hawk nest had been observed in the vicinity of the proposed Mariposa Energy Project (MEP). On August 18, 2010, CDFG's Marcia Grefsrud provided CH2M HILL a map with the nest tree, a photograph of the nest tree, and a copy of the California Natural Diversity Database (CNDDB) field survey form documenting the Swainson's hawk nest.

A field survey for Swainson's hawks and suitable habitat was conducted the morning of August 19, 2010 in response to this new information and upon request by CDFG. The survey, although outside of the seasonal timing prescribed in the Swainson's hawk Technical Advisory Committee's (TAC) survey guidelines[1], was conducted to evaluate the presence of Swainson's hawks and to characterize habitat suitability within ½ mile of the project area.

The survey was conducted by CH2M HILL biologist Jeanette Weisman. This technical memorandum summarizes the survey methods and findings.

Survey Details

Timing: 7:00am- 11:00am

Conditions: Clear skies, sunny, moderate winds (approximately 5-15 mph), temperatures ranging from the mid-60's to the mid-80's.

Methods: A preliminary review of satellite imagery was made prior to the site visit to target potential nesting areas.

The survey was conducted in a manner to maximize the identification of Swainson's hawks within ½ mile of the project area as well as to identify existing Swainson's hawk nest or roosting sites, and to provide a general characterization of suitable nesting and foraging habitat within this area. Suitable nesting and foraging habitat was evaluated based on Swainson's hawk preferences in the Central Valley and similar environments, where

[1] The May 31, 2000 TAC Guidance is available online at: http://www.dfg.ca.gov/wildlife/nongame/docs/swain_proto.pdf

agriculture and riparian habitats are present. In these areas Swainson's hawks are known to nest preferentially in tall trees. Nests in the Central Valley are typically built in a semi-exposed position in the upper canopy or lateral branches of tall trees (mean height 17.6 meters [57.24 feet], Standard Deviation of 3.0 meters [9.84 feet] (Estep, 1989)) affording a panoramic view of the territory. Based on the CDFG California Swainson's Hawk Inventory the average Swainson's hawk nest height was 43 feet in 2005 and 39 feet 2006 (CDFG, 2006). Swainson's hawks nest in a variety of trees including cottonwood *(Populus* spp.), willow *(Salix* spp.), sycamore *(Platanus racemosa),* oak *(Quercus* spp.), pine *(Pinus* spp.), and eucalyptus *(Eucalyptus* spp.) (Bradbury, 2009).

Foraging habitat includes agricultural fields (with a preference towards irrigated hay crops), vineyards, fallow lands, and grasslands (Bradbury, 2009). They forage opportunistically eating a variety of animals including small and large mammals, insects, birds, amphibians, and crayfish (Woodbridge, 1998).

The site visit consisted of a windshield survey along public roads within ½ mile of the MEP footprint, stopping at areas with medium to tall trees considered potential nesting habitat, and where there were good vista points of trees or foraging habitat. Walking surveys were also conducted along the road right of way of Christensen Road, Kelso Road, and Bruns Road to view potential nest trees and bird activity. High powered binoculars and a spotting scope were used to observe bird activity and habitat. A large portion of the survey area was inaccessible by foot and observations were made from a far.

Survey Findings

The following is a summary of Swainson's hawk and habitat observations made during the survey. Figure 1, Appendix A, identifies suitable Swainson's hawk nesting and foraging habitat within ½ mile of MEP. A complete list of species observed is found in Appendix B, and representative photographs in Appendix C.

Two light morph Swainson's hawk adults were observed flying and interacting with one another along the grassland north of Christensen Road tree grove where an active Swainson's hawk nest was observed in 2009. The Swainson's hawks were later observed perched in two Eucalyptus trees along Christensen Road, one of which was the Swainson's hawk nest tree indicated in the CDFG records. The stick nest was not visible, possibly due to the seasonal timing (with trees fully leafed-out, and little activity at the nest) as well as lack of access to the parcel. The nest site is surrounded by California annual grassland which provides foraging habitat for Swainson's hawks.

The eastern survey area along Kelso Road provides suitable nesting habitat for Swainson's hawk, with a variety of tall trees, including Eucalyptus and cedar *(Calocedrus* sp.), along the road and Canal 70 south of Kelso Road. A light morph Swainson's hawk was observed flying over this area, and called out twice before continuing further south outside the survey area.

There is also potentially suitable nesting habitat in the eastern portion of the survey area, north of Kelso Road, in patches of trees growing along Canal 45 and Canal 70. These potential nest trees were observed from afar from Bruns Road.

No suitable Swainson's hawk nesting habitat was observed around Pacific Gas & Electric's (PG&E) Kelso Gas Compressor Station, which is located in the immediate vicinity of the MEP water line and transmission line. The trees on the PG&E property are small ornamentals, including Peruvian pepper (*Schinus molle*) and Bishop pine (*Pinus muricata*), that are no greater than approximately 20 feet in height. No raptor stick nests were observed in these ornamental trees.

Discussion

One confirmed Swainson's hawk nest is approximately ¼ mile west of MEP in a large Eucalyptus tree. An incubating female Swainson's hawk was observed at this nest in 2009 (CDFG 2009). It is not known whether it was an active Swainson's hawk nest during the 2010 breeding season. All other suitable nesting habitat shown on Figure 1 is located greater than ¼ mile but less than ½ mile from the MEP. No suitable nest trees will be directly impacted by MEP. Suitable foraging habitat for Swainson's hawks, in the form of current and former pasture and agricultural lands, and California annual grassland, is present throughout the survey area, including within the project's temporary and permanent impact areas.

Locating raptor stick nests was the not the focus of the survey because of the timing and fact that private property blocked access for close observation of suitable nest trees. Given the time of year, suitable nest trees were fully leafed-out making it difficult to detect stick nests. In addition, the survey was conducted late during the raptor nesting season when feeding or tending to nestlings or fledglings would otherwise provide a clue to location of raptor stick nests. Nonetheless, where visibility and access to trees was possible, an effort was made to observe raptor stick nests.

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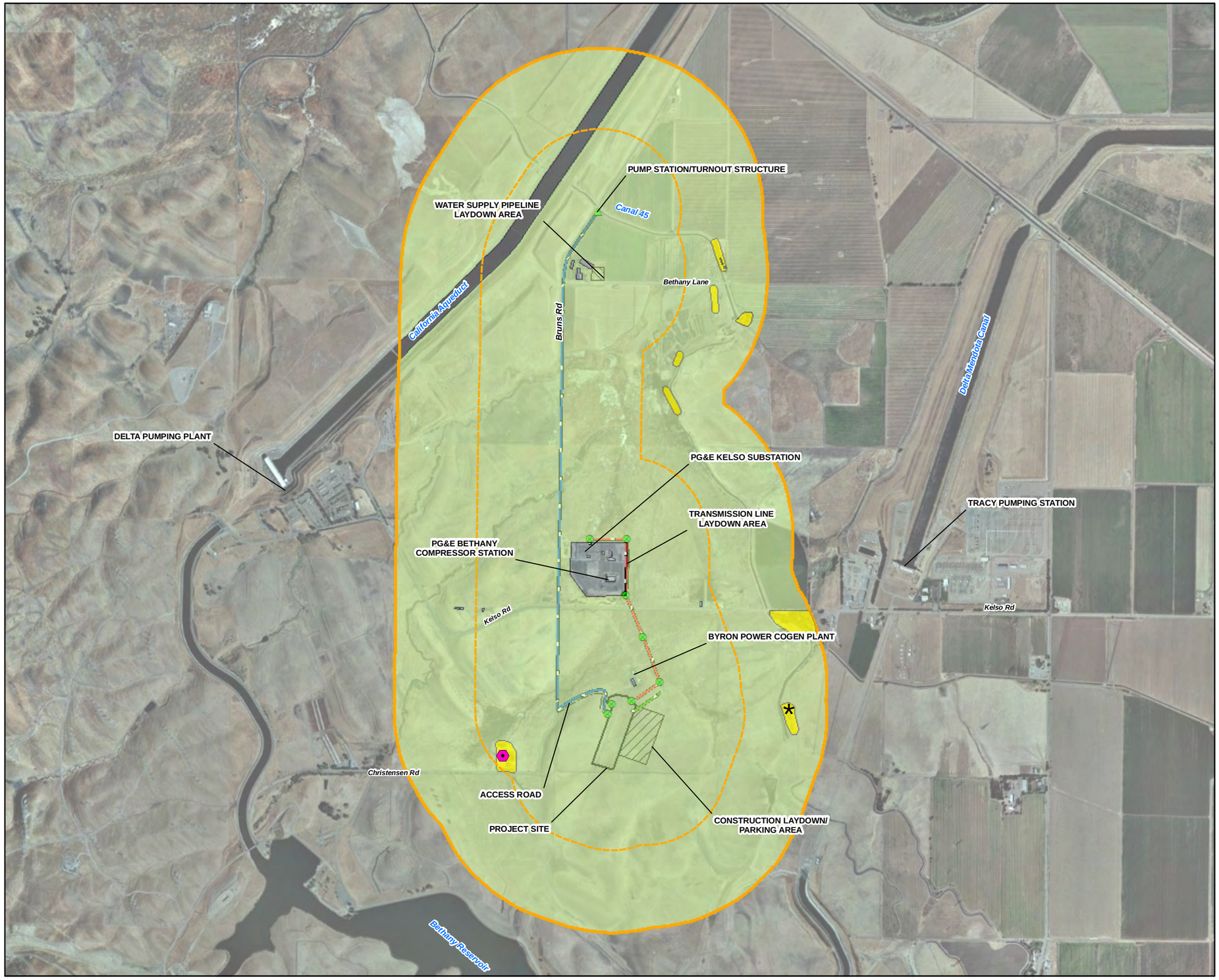
Appendix A
Figure 1, Swainson's Hawk Habitat Characterization



LEGEND

- POWER POLE LOCATION
- PUMP STATION/TURNOUT STRUCTURE
- ACCESS ROAD
- NATURAL GAS PIPELINE ROUTE
- TRANSMISSION LINE ROUTE
- WATER SUPPLY PIPELINE ROUTE
- CONSTRUCTION LAYDOWN/PARKING AREA
- TRANSMISSION LINE LAYDOWN AREA
- WATER SUPPLY PIPELINE LAYDOWN AREA
- PROJECT SITE
- HALF MILE (.8 km) REFERENCE LINE FROM PROJECT
- QUARTER MILE (.40 km) REFERENCE LINE FROM PROJECT
- CONFIRMED SWAINSON'S HAWK NEST
- Buildings
- Suitable Nesting Habitat
- Suitable Foraging Habitat
- * Unable to determine tree height

SOURCE: Survey conducted on August 19, 2010 for suitable Swainson's hawk habitat.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

N

0 2,000 4,000
Feet

FIGURE 1
SWAINSON'S HAWK SURVEY
MARIPOSA ENERGY PROJECT
ALAMEDA COUNTY, CALIFORNIA

Appendix B
Wildlife Species Occurrences

TABLE A-1
Wildlife Occurrences Observed During the Swainson's Hawk Survey-August 19, 2010
Mariposa Energy Project

Scientific Name	Common Name
BIRDS	
Accipitridae	
Buteo jamaicensis	Red-tailed hawk
Buteo regalis	Ferruginous hawk
Buteo swainsoni	Swainson's hawk
Elanus leucurus	White-tailed kite
Columbidae	
Columbia livia	Rock pigeon
Zenaida macroura	Mourning dove
Cathartidae	
Cathartes aura	Turkey vulture
Corvidae	
Corvus brachyrhynchos	American crow
Hirundinidae	
Tachycineta bicolor	Tree swallow
Icteridae	
Euphagus cyanocephalus	Brewer's blackbird
Sturnella neglecta	Western meadowlark
Sturnidae	
Sturnus vulgaris	European starling
MAMMALS	
Leporidae	
Lepus californicus	Black-tailed jackrabbit
Scuiridae	
Spermophilus beecheyi	California ground squirrel

Citations:
American Ornithological Union (AOU). 2010. "Check-list of North American Birds" website: http://www.aou.org/checklist/north/

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Appendix C
Representative Photographs

Photo 1. Confirmed nest tree and adjacent trees north of Christensen Road.

Photo 2. Tree grove with confirmed Swainson's hawk nest north of Christensen Road, viewed from Bruns Road.

Photo 3. Example of Swainson's hawk foraging habitat along Bruns Road.

Photo 4. Suitable nesting trees exist along Canal 45 within ½ mile of the MEP water supply pipeline.

Photo 5. Suitable Swainson's hawk nesting trees along south side of Kelso Road in the eastern portion of the survey area.