DOCKETED

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Project Title:	Sutter Power Plant Application for Certification
TN #:	200832
Document Title:	Botanical Survey for New Generator Tie-Line and Technology Upgrades, Sutter Energy Center, Sutter County, California
Description:	Plant Survey of SEC
Filer:	Sarah Madams
Organization:	CH2M HILL
Submitter Role:	Applicant Consultant
Submission Date:	10/11/2013 11:45:09 AM
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October 11, 2013

Ms. Beverly Bastian
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Subject: Sutter Energy Center (97-AFC-2C), Botanical Survey

Dear Ms. Bastian:

Attached please find Calpine Construction Finance Company, L.P. (Calpine) botanical survey report titled "*Botanical Survey for New Generator Tie-Line and Technology Upgrades"* for the Sutter Energy Center (97-AFC-2C). This botanical survey is being submitted in partial fulfillment of CEC Staff Informal Data Request 26 and to meet general survey requirements.

Please do not hesitate to contact Doug Davy at (916) 286-0278 or me at (916)286-0249 if you have any questions regarding the information we have submitted.

Sincerely,

CH2M HILL

Douglas M. Davy, Ph.D.
Program Manager

Attachment

cc: M. Weinberg, Calpine
B. McBride, Calpine

ES0

Botanical Survey for New Generator Tie-Line and Technology Upgrades, Sutter Energy Center, Sutter County, California

PREPARED FOR: Calpine Construction Finance Company, L.P.

PREPARED BY: Steve Long, CH2M HILL

DATE: September 23, 2013

Introduction

This technical memorandum summarizes the results of a botanical survey that was conducted in support of the Calpine Construction Finance Company, L.P. (CCFC) proposed project to construct a new generator tie line and upgrade existing technology at the existing Sutter Energy Center (SEC) facility, located in Sutter County, California (see Figures 1 and 2; figures are located at the end of this document). The SEC is a 580 MW natural gas-fired, combined-cycle power plant that was constructed in 2000. In particular, this botanical survey is focused on the proposed on-site activities associated with the on-site construction and construction laydown areas for this project. CCFC proposes to construct a new, underground 1.7-mile-long 230 kV generator tie-line and 30-acre 500 kV substation. The generator tie-line extends to the west of the SEC site and will be constructed in existing agricultural access roads. The technology upgrades include the addition of an auxiliary boiler to the facility and the expansion of the existing air-cooled condenser.

Plant Species of Concern

One listed plant species has the potential to occur within the SEC project area: the wooly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*) (CCFC 2013). According to the California Native Plant Society (CNPS 2013) and The Jepson Manual (Baldwin et al. 2012), this native, perennial herb/subshrub occurs in freshwater wetlands such as marshes and swamps, as well as wet banks. It is ranked by the CNPS as a 1B.2 plant, which indicates that this plant is rare, threatened, or endangered in California and elsewhere. The [.2] ranking further signifies that this plant is 'Fairly endangered in California'. The wooly rose-mallow was specifically sought within wetlands and ditches during the botanical survey as described in this memorandum.

Project Location and Land Use

The project area is located within rural land approximately seven miles south-southwest of Yuba City, California (Figure 1). The SEC facility is located at 5029 South Township Road in unincorporated Sutter County (Figure 2). The Project Area is located on the US Geological Survey Gilsizer Slough 7.5 minute Quadrangle in Section 24, Township 14 North, Range 02 East.

The project area is accessed by way of a paved, on-site roadway that connects the SEC facility to South Township Road. The western and southwest portions of the SEC property are accessed through a gate in the westernmost fence at the SEC facility. The entire developed property on which the SEC facility is located is approximately 75 acres and the existing SEC facilities occupy approximately 15 acres. For the purpose of this botanical survey, the area that was surveyed on the SEC property included approximately 11 acres to the west and southwest and 15 acres to the northeast of the existing SEC facilities (see Figure 3). The area that was surveyed outside of the SEC property fenceline followed the proposed underground generator tie-line alignment for 1.7 miles to the south and west of the SEC (see Figure 2).

The dominant land use in the project area is irrigated agriculture. Lands to the north, south and west of the SEC site are used primarily for the production of rice (*Oryza sativa*). There are some fields to the north that are used for irrigated row crops, as well as nut tree groves to the northeast and southeast of the SEC facility. The surrounding area has a series of drainage ditches that flow in the north to south and the east to west directions toward the Sutter Bypass, which is approximately two miles to the west of the SEC property.

Environmental Setting

The project area is located within the Great Valley ecological section of the California Dry Steppe Province, which is characterized by hot summers and mild winters with precipitation occurring mostly in the winter. The landscapes in this province are mostly low hills and alluvial plains. The Great Valley ecological section is characterized as a low-elevation alluvial plain formed on non-marine sedimentary rocks. The cover type is primarily agricultural; however; there are small patches of annual grasslands, western hardwoods, and wet grasslands. The SEC facility is found within the [262Ac] Butte Sink- Sutter Basin ecological subsection (Miles and Goudey 1998; McNab et al., 2005).

The SEC facility site has been filled and graded during the previous construction of the existing Greenleaf I power plant and SEC. The topography is nearly level to very slightly undulating with approximate topographical elevations ranging from 40 feet near the eastern site entrance on South Township Road to about 38 feet in the southwest corner of the project area. In the project area there are larger ditches flowing from north to south along the west side of South Township Road and along the western boundary of the SEC property. There are smaller, connecting drainage channels that flow from east to west along the north and south sides of the SEC property.

Terrestrial Vegetation

Terrestrial vegetation in the majority of the project area within the SEC property (see Figure 3) is characterized by mowed annual grassland with shrubs and native trees limited to the banks of drainage channels. There are planted redwood ornamental trees on the soil berms to the north and south of the SEC property that serve as visual screens for the facility. Naturalized annual grasses in the area include soft chess (*Bromus hordeaceus*), rip-gut brome (*Bromus diandrus*), slender wild oats (*Avena barbata*), foxtail (*Hordeum murinum* ssp. *leporinum*), and perennial wild rye (*Festuca perennis*). Common forb species include yellow-star thistle (*Centaurea soltitialis*), curly dock (*Rumex crispus*), black mustard (*Brassica nigra*), long-beaked filaree (*Erodium botrys*), and winter vetch (*Vicia villosa*). Observed trees along ditch banks to the west of the SEC include cottonwood (*Populus fremontii*) and Gooding's black willow (*Salix gooddingii*). Additional information on the vegetation that was observed on the SEC site and along the proposed underground electrical tie-in conduit is provided in the results section.

Climate and Hydrology

Regional climate data were obtained from the Nicolaus 2 WETS Station CA6194, located approximately eleven miles south-southeast of the Project Area. Average annual precipitation is 19.6 inches, most of which occurs as rainfall between October and April (USDA, 2002).

The Project Area is located within the Sutter Bypass Watershed (Hydrologic Unit Code 18020106) that encompasses approximately 176,725 acres (Calwater. 2004). The Sutter Bypass is connected to the Sacramento River to the south and west of the Project Area.

Soils

As shown on Attachment 1-1, soils in the project area have been mapped by the Natural Resource Conservation Service (NRCS2013a) and include Gridley clay loam and Tisdale clay loam at the SEC site, and Oswald clay and Subaco clay beneath the proposed linear and substation features to the west. Brief descriptions of these soils are provided below based on the Official Soil Series Descriptions (NRCS 2013b) and the National Hydric Soil List (NRCS 2012), an excerpt from which is provided as Attachment 1-2. All colors are for moist soil.

Gridley clay loam soils [132] comprise the entire SEC project area including the areas to the west and south and to the northeast of the existing SEC facility. Aside from the SEC site, the surrounding land is used primarily for irrigated agriculture (including rice, row crops and nut orchards). These soils are moderately well drained and are found on low terraces and basin rims and have slopes of 0 to 1 percent. They are formed in alluvium

from mixed sources. Gridley clay loam is not listed as a hydric soil in Sutter County, except for Oswald soil inclusions on basin floors (0 to 3 percent of total). In a typical profile the surface horizon is a brown (10YR 5/3) clay loam to a depth of 19 inches, underlain by a brown (10YR 5/3) clay from 19 to 37 inches. From 37 to 62 inches the soil is a very pale brown (10YR 7/4) siltstone. This soil has slow permeability and runoff.

Oswald clay soils [153] occur in the majority of the area where the proposed underground generator tie-line and substation are proposed. This area is primarily used for irrigated (flooded) agricultural production. These soils are poorly drained and are found in basins and on basin rims and have slopes of 0 to 2 percent. They are formed in alluvium from mixed sources. Oswald clay is listed as a hydric soil in Sutter County. In a typical profile the surface horizon is a grayish brown (10YR 5/2) clay with few distinct redoximorphic features to a depth of 15 inches, underlain by a brown (10YR 5/3) clay with few distinct redoximorphic features to a depth of 33 inches. The subsurface is a light gray (10YR 7/2) siltstone with many distinct mottles. This soil has slow permeability and very slow runoff.

Subaco clay soils [173] occur in the southwestern portion of the project area. These soils are somewhat poorly drained and are found on basin rims and in basins and have slopes of 0 to 2 percent. This area is primarily used for irrigated (flooded) agricultural production. They are formed in alluvium from mixed sources. Subaco clay is listed as a hydric soil in Sutter County. In a typical profile the surface horizon is a dark gray (10YR 4/1) clay to a depth of 13 inches, underlain by a gray (10YR 5/1) clay with manganese nodules and slickensides to a depth of 26 inches. The subsurface is a light gray (10YR 7/2) siltstone. This soil has slow permeability and very slow runoff.

Tisdale clay loam soils [174] were mapped to the south and east of the existing SEC facility and do not underlie areas where proposed activities would occur. These soils are moderately well drained and are found on low terraces and have slopes of 0 to 2 percent. They are formed in alluvium from mixed sources. Tisdale clay loam is not listed as a hydric soil in Sutter County, except for Oswald soil inclusions on floodplains (0 to 5 percent of total). In a typical profile the surface horizon is a brown (10YR 5/3) clay loam to a depth of 11 inches, underlain by a pale to light yellowish brown (10YR 6/3 to 6/4) clay loam from 11 to 31 inches. From 31 to 40 inches the soil is a very pale brown (10YR 8/3) siltstone. This soil has moderately slow permeability and very slow runoff.

Methodology

Survey Methods

A botanical field survey for the occurrence of wooly rose-mallow was conducted on June 28, 2013. The botanical survey was conducted by CH2M HILL wetland ecologist Steve Long, whose qualifications are briefly summarized in Attachment 2. The botanical survey was conducted in general accordance with the CNPS botanical survey guidelines (CNPS 2001), which is included, for reference, in Attachment 3.

Prior to conducting the field survey, floristic descriptions and photographs of the previously mentioned plant species of concern were gathered from published and on-line sources. As noted in the information provided from Calflora (2013) in Attachment 4, the timing of the botanical survey was chosen to correspond to the blooming period (June through September) when the wooly rose-mallow was likely to be present and identifiable. In addition to the plant information, available on-line information was gathered to describe the soils (included in Attachment 1) and average rainfall distribution and the specific 2012-2013 rainy season precipitation for the project area (included in Attachment 5).

While the wooly rose-mallow was not listed on the National Wetland Plant List (USACE 2012) or on the earlier Revised National List of Plants Species that Occur in Wetlands (Reed 1997), the information provided in the CNPS and The Jepson Manual (Baldwin et al. 2012), indicates that this plant is associated with wetlands (swamps and marshes) or wet banks. For this reason, the search for the wooly rose-mallow was focused on wetlands and drainage canals in the project area. During the field survey, the wetland features on the SEC site (see Figure 3) were all observed directly. The drainage channels on the SEC site and along the generator tie-line route were surveyed while walking transects along sections that were not completely obstructed by dense

Himalayan blackberry (*Rubus armeniacus*) or otherwise inaccessible due to flooding (including irrigated rice fields). The biologist identified and recorded all plant species encountered during the surveys to the taxonomic level necessary to determine rarity in order to satisfy the requirement for a floristic survey. Plants were field identified based on observations of vegetative, flowering, or remnant structures.

Reference Populations

The botanical survey began with a visit to two reference site locations (designated as Reference Location 1 and Reference Location 2 and shown on Attachment 6). These locations were identified in the California Department of Fish and Wildlife's California Natural Diversity Database (CNDDB) buffer and were located within 5 miles to northwest of the SEC project area. These locations were both visited prior to conducting the surveys in the project area with the intent of seeing the listed plants in bloom to facilitate the project area search.

The Sutter National Wildlife Refuge is located within the levees of the Sutter Bypass and there is an eastern and western channel in the SEC project vicinity. It was noted that the vegetation on the interior channel banks within the Refuge was markedly less disturbed than the vegetation on the exterior banks along the east and west Sutter Bypass levees.

There was active construction at Reference Location 1 at McClatchy Road and the Sutter Bypass on the date of the site visit that prevented unrestricted access. The CNDDB mapped occurrence for wooly rose-mallow shows the plant's location to be associated with the western channel of the Sutter Bypass. The east bank of the eastern channel of Sutter Bypass was surveyed for approximately 200 yards to the south of McClatchy Road because the active contruction prevented access to the western bank at Reference Location 1. The western bank of the channel was surveyed using binoculars within this same reach.

At Reference Location 2, there is a bridge at Hughes Road that permitted access to the entire cross-section of the Sutter Bypass. For this reason, it was possible to walk meandering transects to survey the two interior banks (i.e., western bank of the eastern channel and the eastern bank of the western channel). The survey area encompassed approximately 200 yards to the north and to the south of Hughes Road on both the east and west sides of the Sutter Bypass.

Results

Precipitation

The rainfall information provided in Attachment 5 indicates that, in general, the 2012-2013 winter season was wetter than average (by 156 to 168 percent) in the early months (late November and early December 2012, respectively) due to limited, heavy rainfall events. However, the rainfall in the latter part of the rainy season (January, February and March 2013), was much drier than average (24 to 46 percent of normal). There was a slight recovery toward normal rainfall levels in April 2013 at the end of the rainy season. The drier-than-normal winter conditions could affect plant cover in the upland areas, including isolated ponding areas, on the fill areas surrounding the SEC facility. Plant cover within wetland areas on the west and south sides of the SEC and those along the drainage channels are much less likely to have been affected by the relative lack of rainfall in 2012-2013 because these areas benefit either from overflow from the adjacent drainage channels or from regular drainage from the adjacent irrigated fields.

Reference Populations

Wooly rose-mallow was not observed in any of the areas surveyed at Reference Locations 1 and 2. It should be noted that this survey date was approximately one month into a four-month window (June through September) within the known blooming period of wooly rose-mallow.

Plant Species of Concern

During the botanical survey on the SEC property and generator tie-line, neither wooly rose-mallow nor any other special-status plant species, including federal- and state-listed plant species and CNPS species ranked as

1 and 2 were observed in the on-site wetlands or within any of the drainage channels that were surveyed. Additionally, while two plant species (velvetleaf [*Abutilon theophrasti*] and alkali mallow [*Malvella leprosa*]) in the Mallow Family (Malvaceae) were observed during the survey, no *Hibiscus* species of any kind was observed within the survey area. The list of plants that were observed during the field survey conducted on June 28, 2013 is included in Attachment 7.

Conclusions

Based on the activities that are described in this memorandum, wooly rose-mallow is not expected to occur within the proposed work areas associated with the SEC technology upgrades project. The timing of the survey was within the known flowering period for the wooly rose-mallow, the plant species of concern for this project. Given the lack of remnant hibiscus plant stems and fruits, it is believed that this species does not occur in the areas that were investigated.

Construction biological monitoring and best management practices will be employed to minimize erosion and sedimentation impacts to the wetlands. If wooly rose-mallow plants are subsequently identified in the Project Area, then additional steps to protect the plants will be taken in consultation with the California Energy Commission (CEC). This species is expected to meet the definition of Section 15380 of the California Environmental Quality Act (CEQA), which requires mitigation if significant effects to wooly rose-mallow cannot be avoided.

Given the lack of evidence that the wooly rose-mallow occurs within the project area and the proposed permitting and construction monitoring activities, it is concluded that the proposed SEC technology upgrades project will not affect this plant species of concern.

References

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilkins (Baldwin et al.), editors. 2012. *The Jepson Manual: Vascular Plants of California*, second edition. University of California Press, Berkeley.

Calflora. 2013. Information on wild California plants for conservation, education, and appreciation. Taxon Report 11194. Available at http://www.calflora.org/species/index.html. Accessed on June 18.

California Data Exchange Center (CDEC). 2013. Feather River near Nicolas (NIC) and Sacramento Municipal Airport (SMF) weather station data. Available online at http://cdec.water.ca.gov/cgi-progs/stationInfo?station_id=DBF.

California Native Plant Society (CNPS). 2013. Rare Plant Inventory, Inventory Plant Detail. Available at http://www.cnps.org/cnps/rareplants/inventory/index.php.

California Native Plant Society (CNPS). 2001. *CNPS Botanical Survey Guidelines*. Available at: http://www.cnps.org/cnps/rareplants/#committee.

Calpine Construction Finance Corporation, L.P. (CCFC). 2013. Petition to Amend the License for the Sutter Energy Center, Yuba City, California (97-AFC-2C), with technical assistance from CH2M HILL, submitted to the California Energy Commission, March 22.

CalWater. 2004. CalWater 2.2, updated May 2004. California Interagency Watershed Map. Available online at http://bios.dfg.ca.gov/.

CH2M HILL. 1999a. Biological Resources Mitigation Implementation and Monitoring Plan for Sutter Power Plant Project, Sutter County, California. Prepared for Calpine Corporation. August.

CH2M HILL. 1999b. Addendum to Sutter Power Plant Biological Resources Mitigation Implementation and Monitoring Plan; Revised Onsite Wetland Protection Plan. Prepared for Calpine Corporation. November.

McNab, W.H.; Cleland, D.T.; Freeouf, J.A.; Keys, Jr., J.E.; Nowacki, G.J.; Carpenter, C.A., comps. 2005. Description of ecological subregions: sections of the conterminous United States [CD-ROM]. Washington, DC: U.S. Department of Agriculture, Forest Service. 80 p.

Miles, Scott, and Charles Goudey, eds. 1998. Ecological Subregions of California. United States Department of Agriculture, Forest Service. Pacific Southwest Division. R5-EM-TP-005-Net. San Francisco.

Natural Resource Conservation Service (NRCS). 2013a. Soil Map, Sutter County, California. Sutter energy Center Upgrades. Downloaded from NRCS Web Soil Survey, available at http://websoilsurvey.nrcs.usda.gov/app/ , accessed on September 12.

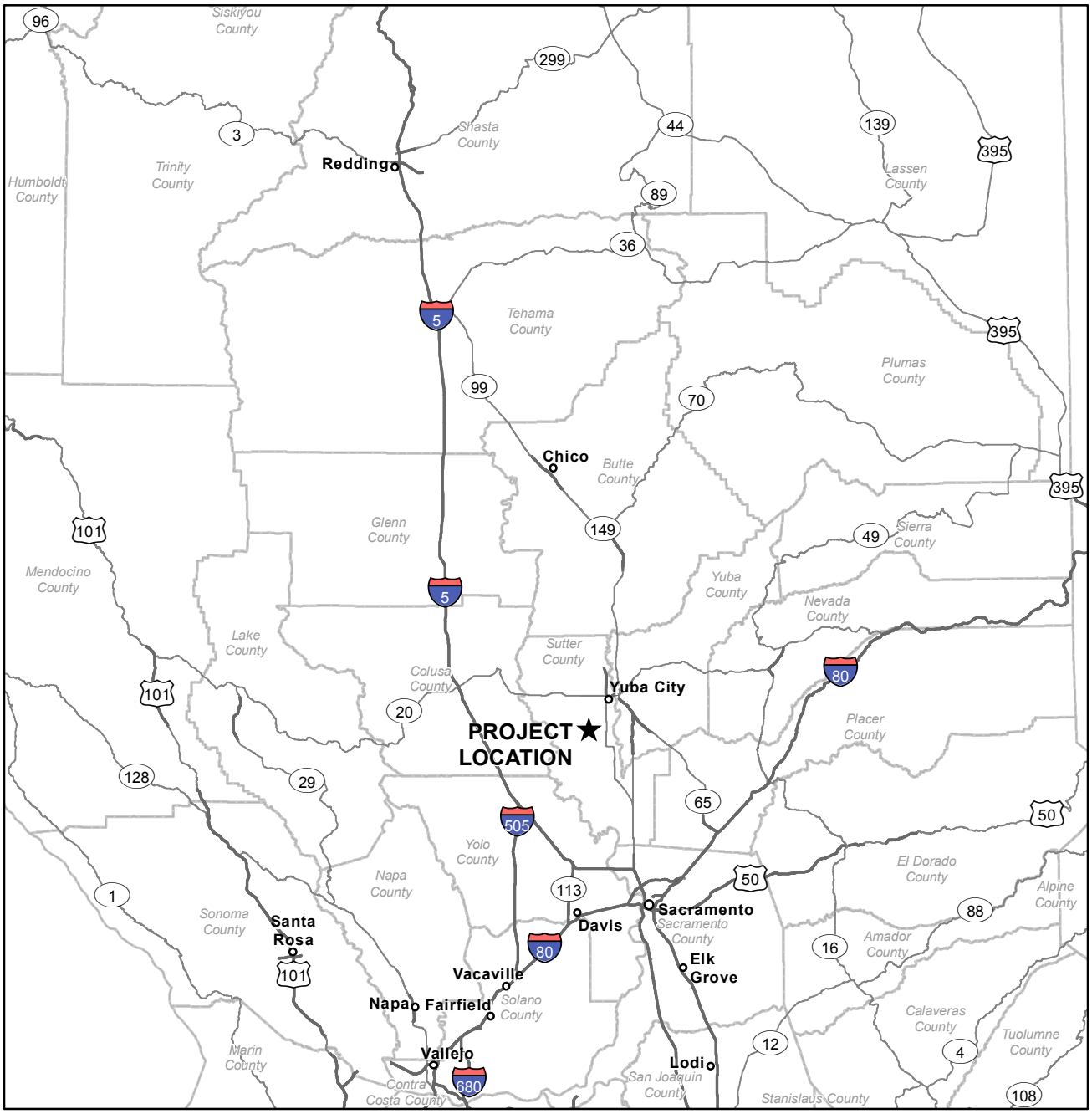
Natural Resource Conservation Service (NRCS). 2013b. Official Series Descriptions. Available on line at http://soils.usda.gov/technical/classification/osd/index.html.

Natural Resource Conservation Service (NRCS). 2012. National Hydric Soil List. Available on line at http://soils.usda.gov/use/hydric/

Reed, P.B. Jr. (comp). 1997. Revision of the National List of Plant Species that Occur in Wetlands. In cooperation with the National and Regional Interagency Review Panels: U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency; and the Natural Resources Conservation Service. Department of Interior. U.S. Fish and Wildlife Service. Washington, D.C.

United States Army Corps of Engineers (USACE). 2012. *2012 National Wetland Plant List*. Available online at: http://plants.usda.gov/wetland.html.

Figures

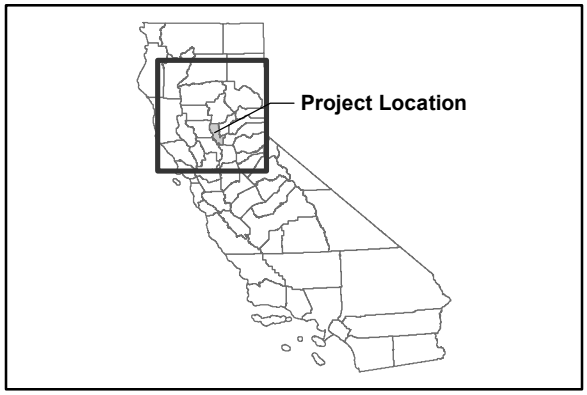


VICINITY MAP

LEGEND

★ Project Location

County Boundary



N

0 15 30

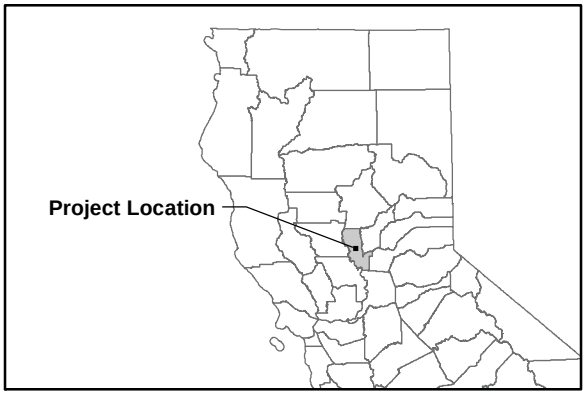
Miles

FIGURE 1
Project Location
Sutter Energy Center

VICINITY MAP

LEGEND

- Sutter Energy Center
- Greenleaf I
- Proposed Substation
- Western O'Banion Substation
- Existing Aboveground Generator Tie-Line
- Proposed Underground Generator Tie-Line



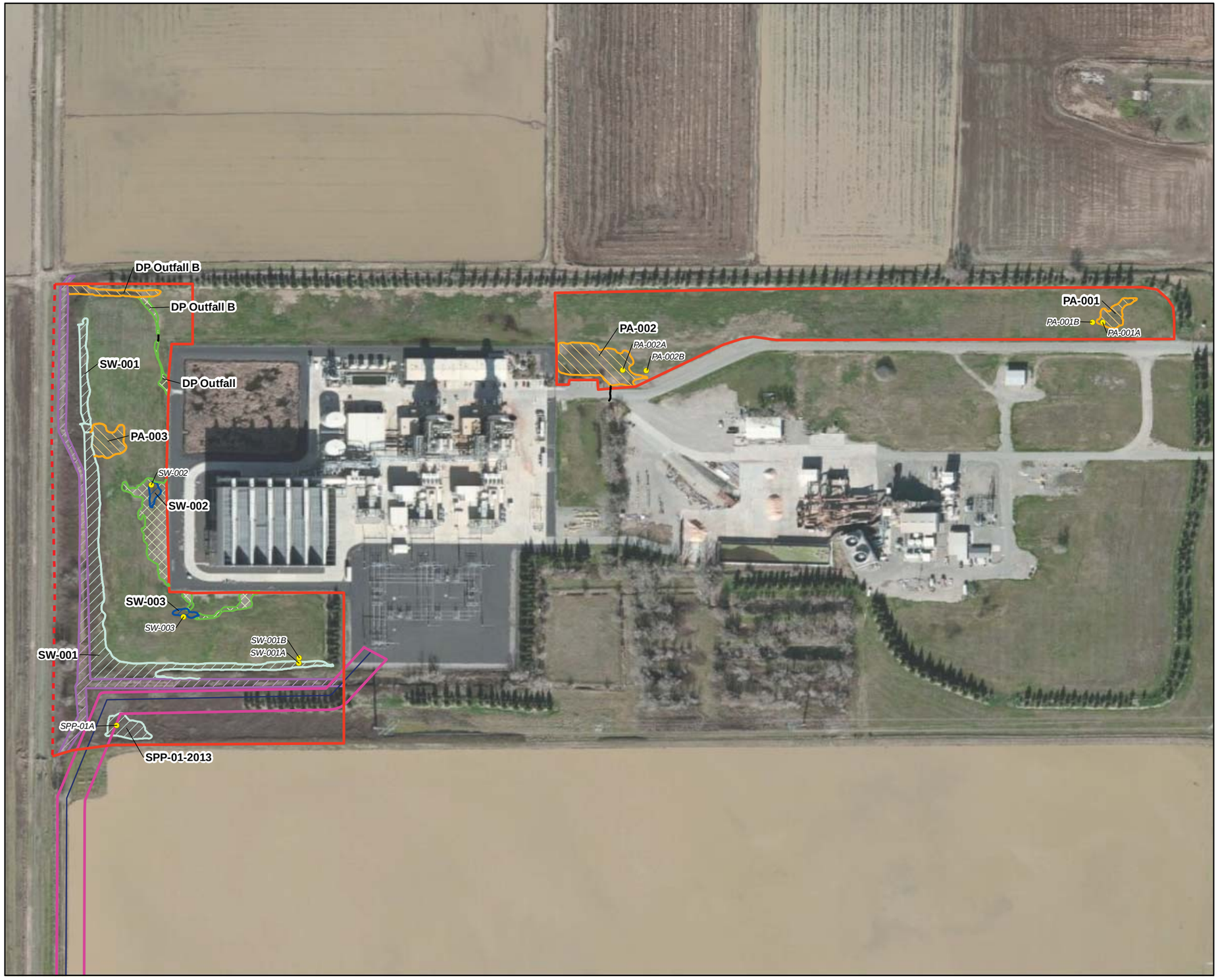
N

0 1,000 2,000

Feet

FIGURE 2
Project Features
Sutter Energy Center

CH2MHILL



VICINITY MAP

LEGEND

- Wetland Data Point
- Limit of Investigation (Dashed Where Approximate)
- Culvert
- Drainage Channel
- Seasonal Ponding
- PEMC (palustrine, emergent, seasonally flooded) Wetland
- PEMA (palustrine, emergent, temporarily flooded) Wetland
- Overland Flow/ Upland Swale Area
- Construction Area
- ROW

Notes:

1. Assessment of wetlands and potential habitat for listed seasonal crustaceans within potential ACC annex areas and construction laydown areas was conducted on January 18, February 21 and June 28, 2013 by CH2MHILL wetland scientist, Steve Long and biologist Rick Crowe.

2. Areas of investigation are regularly mowed. Vegetation control in these areas (along windbreaks) is also managed by herbicide applications that were observed during the January 18, 2013 site visit.

N

0 150 300
Feet

FIGURE 3
Wetland Features in the SEC Project Area
Sutter Energy Center

CH2MHILL

Attachment 1
Project Area Soils

Soil Map—Sutter County, California
(Sutter Energy Center Upgrades)

Map Scale: 1:30,900 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 450 900 1800 2700

Feet
0 1500 3000 6000 9000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sutter County, California
Survey Area Data: Version 7, Aug 31, 2009

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 3, 2010—Apr 29, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Sutter County, California (CA101)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
132	Gridley clay loam, 0 to 1 percent slopes	232.4	18.3%
153	Oswald clay, 0 to 2 percent slopes	617.7	48.8%
173	Subaco clay, 0 to 2 percent slopes	255.1	20.1%
174	Tisdale clay loam, 0 to 2 percent slopes	161.3	12.7%
Totals for Area of Interest		**1,266.5**	**100.0%**

Attachment 3-2. Hydric Status of Soils Mapped within the SEC Project Area

Map unit symbol	Map unit name	Map unit acres	Component name and phase	Representative percent composition	Landforms	Hydric rating	Hydric criteria
132	Gridley clay loam, 0 to 1 percent slopes	9523	Oswald	3	Basin floors	Yes	2B3, 4
153	Oswald clay, 0 to 2 percent slopes	17983	Oswald, clay	90	Basin floors	Yes	2B3, 4
173	Subaco clay, 0 to 2 percent slopes	11648	Subaco, clay	80	Basin floors	Yes	2B3, 4
173	Subaco clay, 0 to 2 percent slopes	11648	Capay	7	Basin floors	Yes	4
173	Subaco clay, 0 to 2 percent slopes	11648	Clear Lake	7	Basin floors	Yes	2B3, 4
173	Subaco clay, 0 to 2 percent slopes	11648	Oswald	6	Basin floors	Yes	2B3, 4
174	Tisdale clay loam, 0 to 2 percent slopes	7996	Oswald	5	Flood plains	Yes	2B3, 4

Source: Natural Resource Conservation Service (NRCS). 2012. National Hydric Soils List available on line at http://soils.usda.gov/use/hydric/.

Attachment 2
Summary of Surveyor Qualifications

Title

Environmental Scientist/Project Manager

Education

M.S., Soil Science, Texas A&M University, College Station

B.S., Forest Resources, University of New Hampshire, Durham

Registration

Professional Wetland Scientist (No. 2308), Society of Wetland Scientists

Registered Environmental Property Assessor (No. 753125), National Registry of Environmental Professionals

Experience

29 years

AFFILIATIONS

Soil Science Society of America

Soil Science Society of Southern New England

Society of Wetland Scientists

Steve Long

Environmental Scientist

With more than 25 years of professional experience as an environmental scientist, Mr. Long is responsible for a wide range of tasks associated with natural resource and hydrogeologic environmental evaluations. Duties include field data collection and mapping in support of development projects and large-scale ecological risk assessments. Manages multiple environmental and compliance projects and prepares proposals and reports.

His natural resource experience includes: evaluation of wetland systems, including delineation and documentation of wetlands by federal and state criteria in California, Nevada, Washington, Connecticut, Massachusetts, New York, New Hampshire, and Maine; evaluation of project constraints and development of alternate strategies for local, state, and federal permitting.

Mr. Long possesses strong skills in onsite chemical testing; description and taxonomic classification of soils, vegetation, and insects; permitting of wetland activities; and statistical analyses of groundwater analytical data.

Rare Plant Survey Experience

Santa Susana Field Laboratory, NASA, Ventura County, California. Between August 2010 and January 2012, completed mapping of habitat and wetlands/waters of the U.S. and State of California for the 440-acre parcel associated with NASA-administered facilities in the Santa Maria Mountains. Mapped habitat for additional peripheral areas in March 2013. Conducted rare plant surveys and additional biological surveys. Provided senior review for EIS biological resources section and co-authored Section 7 Biological Assessment associated with planned remediation activities. In 2008 and 2009, completed habitat evaluations and mapping for all the RFI sites and buffer areas under NASA, Boeing, and DOE control at the SSFL.

Beale AFB, U.S. Air Force, Yuba County, California. Managing environmental permitting and compliance in support of a large ($38 million) performance-based remediation program. Completed wetland delineations and rare plant surveys for fifteen sites encompassing more than 750 acres of large vernal pool complexes.

Rare Plant Survey, UPRR Stege Property, Richmond, CA. Conducted survey for soft bird's beak (*Chloropyron molle*, a federal endangered and state rare species) and Contra Costa goldfields (*Lasthenia conjugens*, a federal endangered species). Specifically sought these two plant species within on-site and adjacent wetlands and summarized the results in a technical memorandum in July 2013.

Attachment 3
California Native Plant Society Survey Guidelines

CNPS Botanical Survey Guidelines

CALIFORNIA NATIVE PLANT SOCIETY
December 9, 1983
Revised June 2, 2001

The following recommendations are intended to help those who prepare and review environmental documents determine when a botanical survey is needed, who should be considered qualified to conduct such surveys, how surveys should be conducted, and what information should be contained in the survey report. The California Native Plant Society recommends that lead agencies not accept the results of surveys unless they are conducted and reported according to these guidelines.

1. Botanical surveys are conducted in order to determine the environmental effects of proposed projects on all botanical resources, including special status plants (rare, threatened, and endangered plants) and plant (vegetation) communities. Special status plants are not limited to those that have been listed by state and federal agencies but include any plants that, based on all available data, can be shown to be rare, threatened, or endangered under the following definitions:

   > A species, subspecies, or variety of plant is "endangered" when the prospects of its survival and reproduction are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, or disease. A plant is "threatened" when it is likely to become endangered in the foreseeable future in the absence of protection measures. A plant is "rare" when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens.[1]

   Rare plant (vegetation) communities are those communities that are of highly limited distribution. These communities may or may not contain special status plants. The most current version of the California Natural Diversity Database's *List of California Terrestrial Natural Communities*[2] should be used as a guide to the names and status of communities.

   Consistent with the California Native Plant Society's goal of preserving plant biodiversity on a regional and local scale, and with California Environmental Quality Act environmental impact assessment criteria[3], surveys should also assess impacts to locally significant plants. Both plants and plant communities can be considered significant if their local occurrence is on the outer limits of known distribution, a range extension, a rediscovery, or rare or uncommon in a local context (such as within a county or region). Lead agencies should address impacts to these locally unique botanical resources regardless of their status elsewhere in the state.

2. Botanical surveys must be conducted to determine if, or to the extent that, special status or locally significant plants and plant communities will be affected by a proposed project when any natural vegetation occurs on the site and the project has the potential for direct or indirect effects on vegetation.

3. Those conducting botanical surveys must possess the following qualifications:
   a. Experience conducting floristic field surveys;
   b. Knowledge of plant taxonomy and plant community ecology and classification;
   c. Familiarity with the plants of the area, including special status and locally significant plants;

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[1] California Environmental Quality Act Guidelines, §15065 and §15380.
[2] List of California Terrestrial Natural Communities. California Department of Fish and Game Natural Diversity Database. Sacramento, CA.
[3] California Environmental Quality Act Guidelines, Appendix G (Initial Study Environmental Checklist).

d. Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
e. Experience with analyzing impacts of a project on native plants and communities.

4. Botanical surveys should be conducted in a manner that will locate any special status or locally significant plants or plant communities that may be present. Specifically, botanical surveys should be:

   a. Conducted in the field at the proper times of year when special status and locally significant plants are both evident and identifiable. When special status plants are known to occur in the type(s) of habitat present in the project area, nearby accessible occurrences of the plants (reference sites) should be observed to determine that the plants are identifiable at the time of survey.

   b. Floristic in nature. A floristic survey requires that every plant observed be identified to species, subspecies, or variety as applicable. In order to properly characterize the site, a complete list of plants observed on the site shall be included in every botanical survey report. In addition, a sufficient number of visits spaced throughout the growing season is necessary to prepare an accurate inventory of all plants that exist on the site. The number of visits and the timing between visits must be determined by geographic location, the plant communities present, and the weather patterns of the year(s) in which the surveys are conducted.

   c. Conducted in a manner that is consistent with conservation ethics and accepted plant collection and documentation techniques[4,5]. Collections (voucher specimens) of special status and locally significant plants should be made, unless such actions would jeopardize the continued existence of the population. A single sheet should be collected and deposited at a recognized public herbarium for future reference. All collections shall be made in accordance with applicable state and federal permit requirements. Photography may be used to document plant identification only when the population cannot withstand collection of voucher specimens.

   d. Conducted using systematic field techniques in all habitats of the site to ensure a thorough coverage of potential impact areas. All habitats within the project site must be surveyed thoroughly in order to properly inventory and document the plants present. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity.

   e. Well documented. When a special status plant (or rare plant community) is located, a California Native Species (or Community) Field Survey Form or equivalent written form, accompanied by a copy of the appropriate portion of a 7.5-minute topographic map with the occurrence mapped, shall be completed, included within the survey report, and separately submitted to the California Natural Diversity Database. Population boundaries should be mapped as accurately as possible. The number of individuals in each population should be counted or estimated, as appropriate.

5. Complete reports of botanical surveys shall be included with all environmental assessment documents, including Negative Declarations and Mitigated Negative Declarations, Timber Harvesting Plans, Environmental Impact Reports, and Environmental Impact Statements. Survey reports shall contain the following information:

   a. Project location and description**,** including:

[4] Collecting Guidelines and Documentation Techniques. California Native Plant Society Policy (adopted March 4, 1995).
[5] Ferren, W.R., Jr., D.L. Magney, and T.A. Sholars. 1995. The Future of California Floristics and Systematics: Collecting Guidelines and Documentation Techniques. *Madroño* 42(2):197-210.

1) A detailed map of the location and footprint of the proposed project.
2) A detailed description of the proposed project, including one-time activities and ongoing activities that may affect botanical resources.
3) A description of the general biological setting of the project area.

b. Methods, including:
   1) Survey methods for each of the habitats present, and rationale for the methods used.
   2) Description of reference site(s) visited and phenological development of the target special status plants, with an assessment of any conditions differing from the project site that may affect their identification.
   3) Dates of surveys and rationale for timing and intervals; names of personnel conducting the surveys; and total hours spent in the field for each surveyor on each date.
   4) Location of deposited voucher specimens and herbaria visited.

c. Results, including:
   1) A description and map of the vegetation communities on the project site. The current standard for vegetation classification, *A Manual of California Vegetation*[6], should be used as a basis for the habitat descriptions and the vegetation map. If another vegetation classification system is used, the report must reference the system and provide the reason for its use.
   2) A description of the phenology of each of the plant communities at the time of each survey date.
   3) A list of all plants observed on the project site using accepted scientific nomenclature, along with any special status designation. The reference(s) used for scientific nomenclature shall be cited.
   4) Written description and detailed map(s) showing the location of each special status or locally significant plant found, the size of each population, and method used to estimate or census the population.
   5) Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms and accompanying maps.

d. Discussion, including:
   1) Any factors that may have affected the results of the surveys (*e.g.*, drought, human disturbance, recent fire).
   2) Discussion of any special local or range-wide significance of any plant population or community on the site.
   3) An assessment of potential impacts. This shall include a map showing the distribution of special status and locally significant plants and communities on the site in relation to the proposed activities. Direct, indirect, and cumulative impacts to the plants and communities shall be discussed.
   4) Recommended measures to avoid and/or minimize direct, indirect, and cumulative impacts.

e. References cited and persons contacted.

f. Qualifications of field personnel including any special experience with the habitats and special status plants present on the site.

[6] Sawyer, J.O. and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society. Sacramento, CA. 471 pp.

Attachment 4
CalFlora Taxon Report

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more photos on CalPhotos

Hibiscus lasiocarpos Cav. **var. occidentalis** (Torr.) A. Gray

Woolly rose-mallow

Hibiscus lasiocarpos var. occidentalis, a dicot, is a **perennial herb** that is **native** to California.

It is included in the CNPS Inventory of Rare and Endangered Plants on list **1B.2** (*rare, threatened, or endangered in CA and elsewhere*). 7th Edition / 8th Edition

Elevation: between 0 and 394 feet

Family: **MALVACEAE**

Related: *See a list of other species in the genus* **Hibiscus** *found in California.*

See the more inclusive parent record **Hibiscus lasiocarpos**.

Name Status:

Accepted by TJM2

PLANTS: accepted name: Hibiscus lasiocarpos

Other Names: (according to)

TJM2: Hibiscus californicus

TJM2: Hibiscus lasiocarpus

CNPS: Hibiscus lasiocarpos

See a detailed **Distribution Grid** *of this plant in California.*

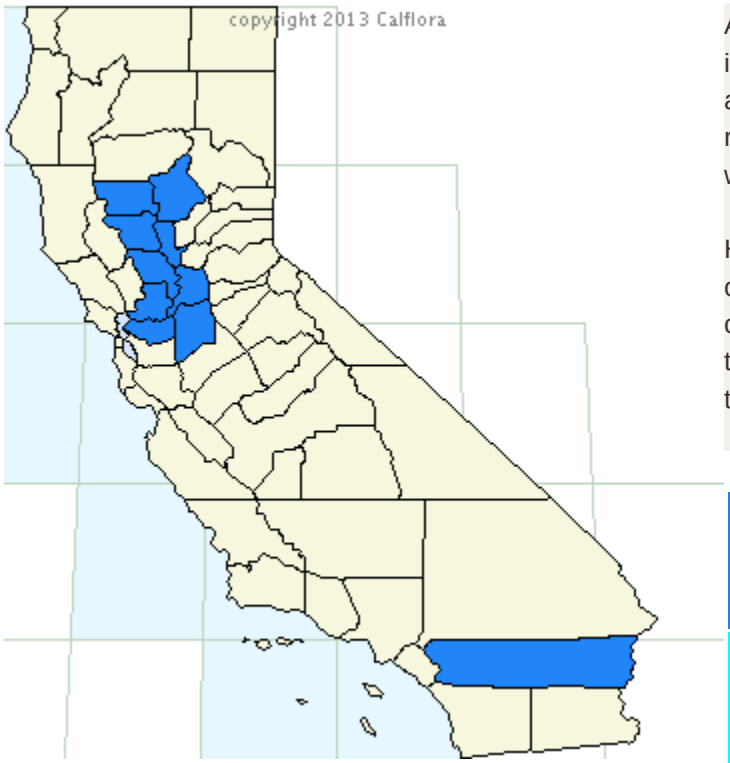
Distribution by County:

Plant **Characteristics** + Associated Organisms

Bloom Period

Add an Observation

Observation Hotline *including observations with photos*



A shaded county indicates that there are ocurrence records of this plant within the county.

Hover the mouse over the map to see county names. Click to view records from that county.

There are **specimen** records from this county in an herbarium.

There are **documented** records, vouchered or confirmed by an expert.

There are **reported** records.

There are reported records available indirectly (eg. in botanical **literature**).

Records by County, with approximate record counts in the form: TOTAL / CCH. Click county name to view records.

Butte: 18 / 14 CCH Contra Costa: 45 / 9 CCH Colusa: 11 / 9 CCH Glenn: 14 / 10 CCH
Riverside: 1 / 1 CCH Sacramento: 7 / 2 CCH San Joaquin: 9 / 9 CCH Solano: 2 / 2 CCH
Sutter: 8 / 7 CCH Tehama: 1 / 0 CCH Yolo: 1 / 1 CCH
CCH: records provided by the participants of the Consortium of California Herbaria.

Information about Hibiscus lasiocarpos var. occidentalis from other sources:

Photos on **Picasa** / **Flickr** / **Google Images**

website references on **Google**

Nursery availability and horticultural info (what grows with this plant?) on **CNPLX**

CNPS Inventory of rare and endangered plants

2012 Jepson Manual Treament from the Jepson Herbarium, University of California, Berkeley

Search **efloras.org** (Flora of North America)

Citation

Calflora: Information on California plants for education, research and conservation, based on data contributed by dozens of public and private institutions and individuals, including the Consortium of Calif. Herbaria. [web application]. 2013. Berkeley, California: The Calflora Database [a non-profit organization]. Available: http://www.calflora.org/ (Accessed: Aug 08, 2013).

Note that the information on this page comes from diverse sources, and that none of the links are sponsored.

SOURCE: (Calflora 2013) Accessed 6/18/2013 at http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=11194

CNPS California Native Plant Society — Rare and Endangered Plant Inventory

Home | About the Inventory | CNPS Home | Join CNPS | Simple Search | Advanced Search

Export to Excel

Hibiscus lasiocarpos var. *occidentalis*

Common Name:	woolly rose-mallow
Family:	Malvaceae
Synonyms:	*Hibiscus californicus*, *Hibiscus lasiocarpos*, *Hibiscus lasiocarpus*
Element Code:	PDMAL0H0R3
Full Name:	*Hibiscus lasiocarpos* Cav. var. *occidentalis* (Torr.) A. Gray
USDA PLANTS Symbol:	

Biology

Lifeform: perennial rhizomatous herb

Blooming Period: June - September

Habitat:
- Marshes and swamps (freshwater)

Rarity Status

Rare Plant Rank: 1B.2
Rare, threatened, or endangered in California and elsewhere
.2: Fairly endangered in California

Federal Listing Status:
Not Listed

State Listing Status:
Not Listed

State Rank: S2
S2: Imperiled.

Global Rank: G5T2
T2: Imperiled. **G5:** (species) Secure, considering populations outside California.

Occurrence Data from DFG California Natural Diversity Database

Total # of Known Element Occurrences: 173

Element Occurrence Ranks:

A	B	C	D	X	U
0	82	33	16	1	41

Population Status:

Historic >20 yrs	Recent <=20 yrs
66	107

Presence:

Present Extant	Possibly Extirpated	Extirpated
172	0	1

Notes

Most occurrences are very small. Seriously threatened by habitat disturbance, development, agriculture, recreational activites, and channelization of the Sacramento River and its tributaries. Also threatened by weed control measures and erosion. Possibly threatened by trail maintenance. See *Madroño* 56(2):104-111 for revised taxonomy.

To submit rare plant observation data, use the CNDDB field survey form. Please see also the CNPS Rare Plant Data page.

Date Added: 1974-01-01

Last Update: 2012-11-06

Location

Elevation: 0 - 120 meters

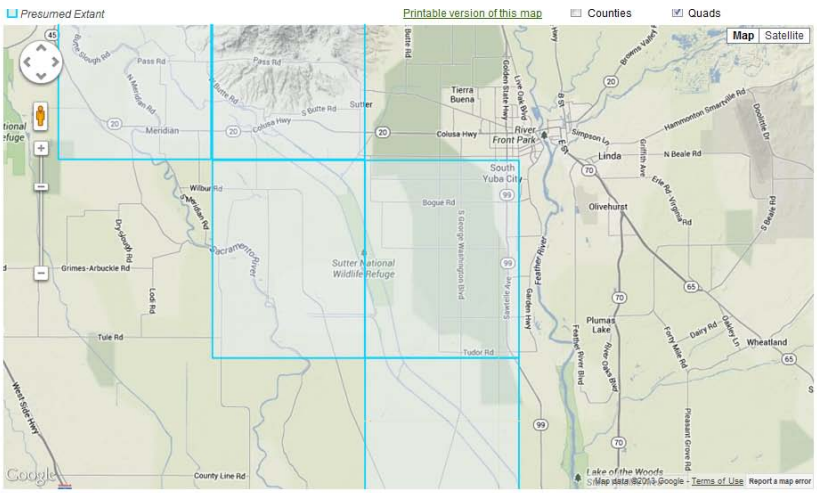
California Endemic: yes

States: California

California Counties and Islands: *name (code)*
Butte (BUT), Contra Costa (CCA), Colusa (COL), Glenn (GLE), Sacramento (SAC), San Joaquin (SJQ), Solano (SOL), Sutter (SUT), Yolo (YOL)

Quads: *name (DWR code) USGS code*
Stockton West (462A) 37121H3, Holt (462B) 37121H4, Woodward Island (463A) 37121H5, Brentwood (463B) 37121H6, Clifton Court Forebay (463D) 37121G5, Thornton (479B) 38121B4, Terminous (479C) 38121A4, Isleton (480A) 38121B5, Rio Vista (480B) 38121B6, Jersey Island (480C) 38121A6, Bouldin Island (480D) 38121A5, Florin (496B) 38121D4, Bruceville (496C) 38121C4, Clarksburg (497A) 38121D5, Liberty Island (497C) 38121C6, Courtland (497D) 38121C5, Dozier (498D) 38121C7, Grays Bend (513B) 38121F6, Sacramento West (513D) 38121E5, Sutter Causeway (529B) 38121H6, Knights Landing (529C) 38121G6, Gilsizer Slough (544C) 39121A6, Sutter Buttes (545A) 39121B7, Meridian (545B) 39121B8, Tisdale Weir (545D) 39121A7, West of Biggs (561A) 39121D7, Butte City (561B) 39121D8, Sanborn Slough (561C) 39121C8, Pennington (561D) 39121C7, Logandale (562B) 39122D2, Hamlin Canyon (576B) 39121F6, Shippee (576C) 39121E6, Ord Ferry (577B) 39121F8, Llano Seco (577C) 39121E8, Nelson (577D) 39121E7, Paradise West (592C) 39121G6, Richardson Springs (593D) 39121G7

Notes:
Species may be present in other areas where conditions are favorable.



SOURCE: (CNPS 2013). Accessed 6/18/2013 at http://www.rareplants.cnps.org/detail/906.html.

Attachment 5
Climate and Precipitation Information

WETS Station : NICOLAUS 2, CA6194 Creation Date: 08/29/2002
Latitude: 3855 Longitude: 12133 Elevation: 00040
State FIPS/County(FIPS): 06101 County Name: Sutter
Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.) avg daily max	avg daily min	avg	Precipitation (Inches) avg	30% chance will have less than	30% chance will have more than	avg # of days w/.1 or more	avg total snow fall
January	-----	-----	-----	3.89	1.99	4.75	7	0.0
February	-----	-----	-----	3.27	1.36	3.98	6	0.0
March	-----	-----	-----	3.19	1.67	3.89	6	0.0
April	-----	-----	-----	1.25	0.55	1.55	3	0.0
May	-----	-----	-----	0.55	0.08	0.65	1	0.0
June	-----	-----	-----	0.24	0.00	0.29	0	0.0
July	-----	-----	-----	0.06	0.00	0.00	0	0.0
August	-----	-----	-----	0.05	0.00	0.00	0	0.0
September	-----	-----	-----	0.44	0.00	0.48	1	0.0
October	-----	-----	-----	1.15	0.51	1.45	2	0.0
November	-----	-----	-----	2.56	1.13	3.17	5	0.0
December	-----	-----	-----	2.90	1.44	3.54	5	0.0
Annual	-----	-----	-----	------	15.43	22.25	--	----
Average	0.0	0.0	0.0	------	------	------	--	----
Total	-----	-----	-----	19.57	------	------	36	0.0

GROWING SEASON DATES

Probability	Temperature: 24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates / Growing Season Length		
50 percent *	---------- / ------	---------- / ------	---------- / ------
70 percent *	---------- / ------	---------- / ------	---------- / ------

* Percent chance of the growing season occurring between the Beginning and Ending dates

total 1963-2002 prcp

Station : CA6194, NICOLAUS 2

-------   Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
63	3.80	2.23	3.33	4.30	0.81	0.32		0.00	0.12	2.30	4.78	0.34	22.33
64	4.16	0.25	M1.30	0.39	0.24	0.26	0.00	0.05	0.00	1.58	3.39	3.93	15.55
65	2.93	0.67	0.83	3.23	0.07	0.01	0.00	0.75	0.05	0.08	4.63	2.21	15.46
66	1.86	1.79	0.36	1.45	0.25	0.07	0.06	0.00	0.00	0.00	6.90	3.15	15.89
67	6.83	0.56	3.71	4.11	0.06	0.96	0.00	0.00	0.07	0.60	1.83	1.24	19.97
68	4.69	3.46	3.00	0.31	0.24	0.32	0.00	0.25	0.04	1.01	4.08	5.14	22.54
69	8.90	6.06	1.94	1.76	0.01	0.00	0.00	0.00	0.00	1.05	0.58	4.71	25.01
70	6.41	1.50	2.22	0.50	0.00	0.33	0.00	0.00	0.00	0.87	6.37	5.40	23.60
71	1.06	0.16	2.82	0.40	0.84	0.07	0.00	0.00	0.06	0.27	1.16	4.69	11.53
72	0.97	1.50	0.30	1.14	0.58	0.34	0.00	0.00	0.92	1.70	5.04	2.10	14.59
73	8.42	7.02	2.72	0.65	0.08	0.00	0.00	0.00	0.58	1.36	5.56	4.51	30.90
74	3.19	1.01	4.57	0.87	0.00	1.04	1.38	0.00	0.00	1.16	1.22	3.16	17.60
75	0.64	7.85	4.90	0.78	0.00	0.05	0.04	0.12	0.00	2.35	0.73	1.00	18.46
76	0.67	1.03	0.90	1.53	0.00	0.07	0.00	0.29	0.76	0.05	0.53	0.33	6.16
77	1.23	1.54	0.90	0.00	1.47	0.00	0.10	0.00	0.82	0.54	2.14	3.48	12.22
78	8.89	2.86	5.14	3.06	0.00	0.00	0.00	0.00	0.52	0.00	4.24	0.82	25.53
79	5.06	4.28	2.69	1.18	0.14	0.00	0.12	0.00	0.14	1.93	2.76	3.64	21.94
80	4.33	7.35	1.79	0.58	0.73	0.35	0.15	0.00	0.00		0.25	2.65	18.18
81	4.44	0.72	4.24	1.38	0.36	0.00	0.00	0.00	0.63	2.45	6.17	4.10	24.49
82	3.81	2.23	5.36	5.03	0.00	0.17	0.00	0.00	1.10	2.97	5.36	2.26	28.29
83	5.49	4.88	8.15	3.87	0.32	0.98	0.00	0.00	0.99	0.85	6.25	7.06	38.84
84	0.43	1.68	1.74	0.47	0.01	0.12	0.00	0.27	0.01	2.66	5.50	1.67	14.56
85	1.21	M1.24	2.70	0.11	0.01	0.07	0.00	0.08	0.79	0.84	3.98	2.27	13.30
86	3.88	6.87	3.51	0.80	0.20		0.00	0.00	1.79	0.20	0.33	1.31	18.89
87	2.63	2.72	3.40	0.13	0.04	0.00	0.00		0.00	1.74	2.59	4.87	18.12
88	4.10	0.30	0.47	2.16	0.50	0.28	0.01	0.00	0.00	0.11	3.04	3.51	14.48
89	M1.60	1.34	6.43	0.32	0.37	0.79	0.00	0.34	3.17	1.77	1.43	0.11	17.67
90	5.12	3.22	1.50	0.30		0.00	0.00	0.00	0.00	0.45	0.74	1.65	12.98
91	0.65	2.69	8.27	0.30	0.54	0.52	0.02	0.15	0.01	0.93	0.33	2.65	17.06
92	2.20	6.32	2.97	1.17	0.04	0.36	0.00	0.00	0.00	1.76	0.41	5.61	20.84
93	8.34	5.36	2.28	0.89	1.27	0.65	0.00	0.00	0.00	0.61	2.49	2.25	24.14
94	2.77	3.45	0.41	0.73	0.66	0.00	0.00	0.00	0.07	0.60	4.58	4.48	17.75
95	10.04	0.14	8.14	1.21	1.20			0.00	0.00	0.00	0.00	5.35	26.08
96	3.29	6.09	2.53	3.25	2.43	0.00	0.00	0.00	0.00	1.83	1.10	6.72	27.24
97	8.28	0.23	0.98	0.31	0.52	0.75	0.00	0.24	0.32	1.24	4.33	2.57	19.77
98	5.96		2.07	2.11	2.45	0.02	0.00	0.00	0.38	1.09	2.45	1.53	18.06
99	2.85	3.77	1.48	1.34	0.09	0.02	0.00	0.00	0.00	0.23	1.49	0.29	11.56
0	5.09	7.12	2.28	1.58	1.12	0.09	0.00	0.00	0.22	1.73	0.75	0.38	20.36
1	3.69	4.28	1.87	0.88	0.00	0.12	0.00	0.00	0.23	0.50	2.59	5.67	19.83
2													

SOURCE: http://www.wcc.nrcs.usda.gov/ftpref/support/climate/wetlands/ca/06101.txt

FEATHER RIVER NEAR NICOLAUS *(NIC)*

Elevation: 43' · FEATHER R basin · Operator: CA Dept of Water Resources

Provisional data, subject to change.

Query executed Monday at 11:39:20

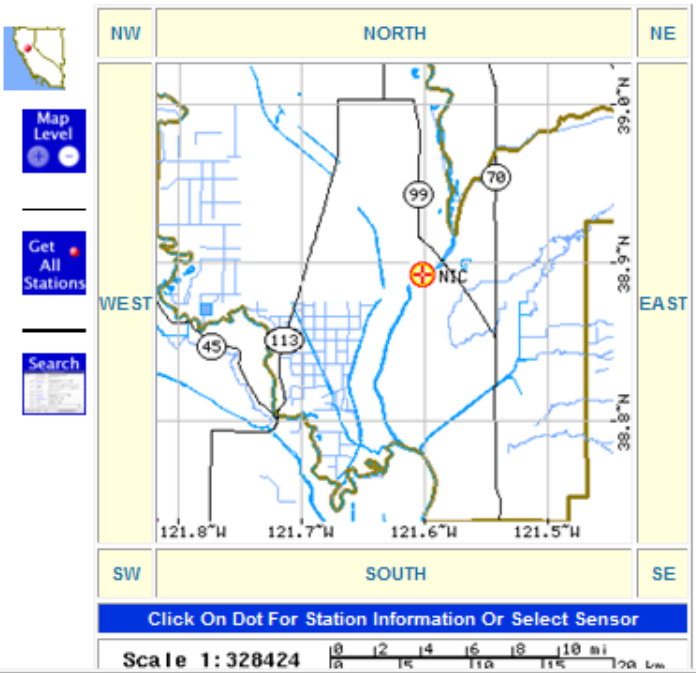
Earlier

Date	*RAIN INCHES*	
08/2011	0.00	
09/2011	0.00	
10/2011	1.43	
11/2011	0.93	
12/2011	0.10	
01/2012	3.55	
02/2012	0.81	
03/2012	4.47	
04/2012	2.24	
05/2012	0.02	
06/2012	0.00	
07/2012	--	
08/2012	--	
09/2012	--	
10/2012	1.07	
11/2012	4.28	
12/2012	4.52	
01/2013	0.94	
02/2013	0.81	
03/2013	1.46	
04/2013	0.92	e
05/2013	--	
06/2013	--	
07/2013	--	

SOURCE: http://cdec.water.ca.gov/cgi-progs/queryMonthly?NIC; accessed on July 29, 2013

CDEC Station Locator - FEATHER RIVER NEAR NICOLAUS *(NIC)*

Located at elevation 43 feet in the FEATHER R basin. Latitude 38.891, Longitude -121.604.

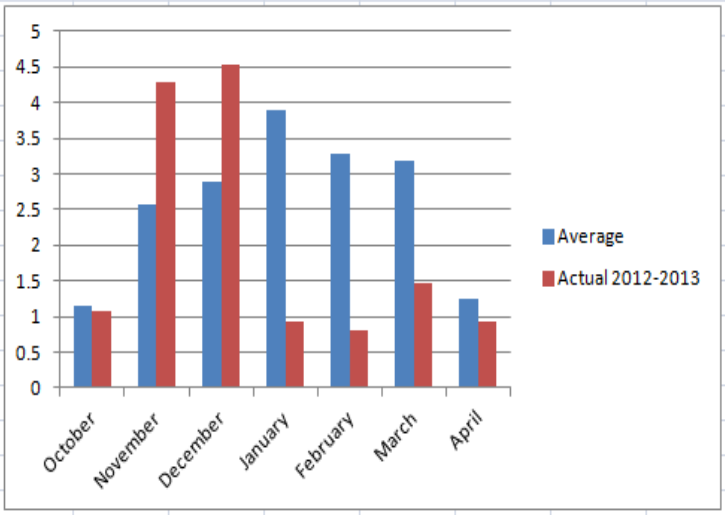


Station:

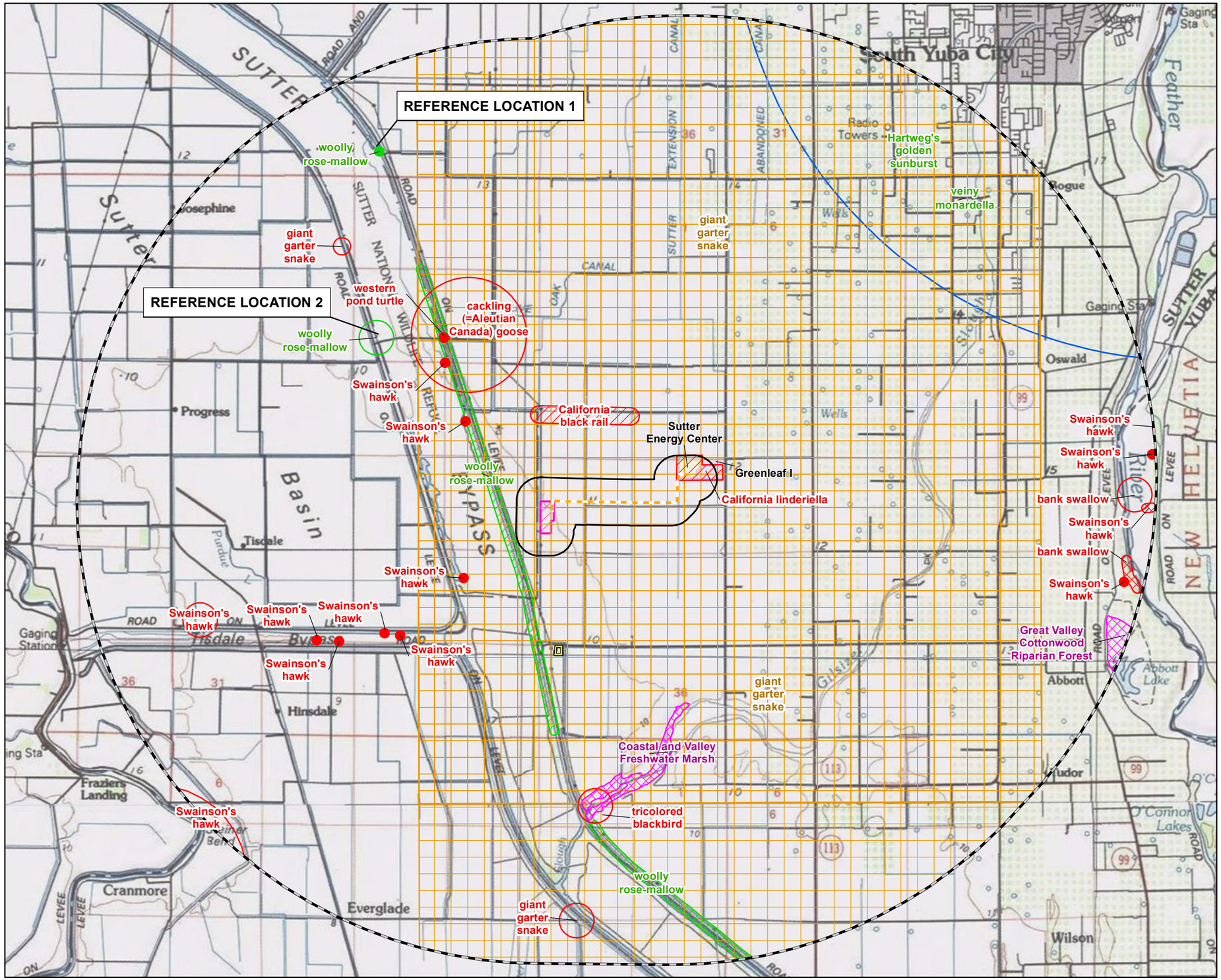
Other stations in the area:

BJP - BYRON JACKSON PUMPS
BPG - BEAR RIVER AT PLEASANT GROVE RD
BRF - DRY BEAR CONFLUENCE - FCO
FRE - SACTO R AT FREMONT WEIR (CREST 33.5')
KNL - SACRAMENTO RIVER AT KNIGHTS LANDING
PM1 - PUMPING PLANT 1
RCS - RIDGE CUT SLOUGH AT KNIGHTS LANDING
SB1 - SUTTER BYPASS CHANNEL AT PUMPING PLANT 1
SBP - SUTTER BYPASS AT RD 1500 PUMP
SSK - SACRAMENTO SLOUGH NR KARNAK
VON - SACRAMENTO RIVER AT VERONA
WSL - WILLOW SLOUGH AT SB WEST BURROW PIT

Month	Average	Actual 2012-2013	Percentage
October	1.15	1.07	93.0
November	2.56	4.28	167.2
December	2.9	4.52	155.9
January	3.89	0.94	24.2
February	3.27	0.81	24.8
March	3.19	1.46	45.8
April	1.25	0.92	73.6
Total	**18.21**	**14**	**76.9**



Attachment 6
CNDD Map



LEGEND

- Sutter Energy Center
- Greenleaf I
- Proposed Substation
- Western O'Banion Substation
- Proposed Underground Generator Tie-Line
- Quater Mile Buffer
- Five Mile Buffer

CNDDB (January 2013)

- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)
- Terrestrial Comm. (specific)
- Multiple (circular)
- Giant garter snake (Sensitive EO)

Note:
1. Source - California Dept. of Fish and Game, Californa Natural Diversity Database (CNDDB) January, 2013.

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 0.5 1
Miles

FIGURE 6-1
CNDDB-listed Occurrences of Special-Status Species
Sutter Energy Center

Attachment 7
List of Plants Observed in the Project Area

Table 7-1. List of Plants Observed in the SEC Project Area and Two Wooly Rose-Mallow Reference Areas in June 2013

Common Name	*Scientific Name*	Wetland Indicator Status	Name Change?
Trees			
Tree-of-heaven	*Ailanthus altissima*	FACU	
boxelder	*Acer negundo*	FACW	
Northern California black walnut	*Juglans hindsii*	FAC	
Osage orange	*Maclura pomifera*	UPL	
Cottonwood	*Populus fremontii*	NL (FAC+)	
Gooding's black willow	*Salix gooddingii*	FACW	
Red willow	*Salix laegivata*	FACW	
Shrubs and Woody Vines			
common (edible) fig	*Ficus carica*	FACU	
Blue elderberry	*Sambucus nigra* L. *subsp. caerulea*	FAC	formerly *Sambucus mexicana*
Himalayan blackberry	*Rubus armeniacus*	FACU	formerly *Rubus discolor*
poison oak	*Toxicodendron diversilobum*	NL	
California grape	*Vitis calfornica*	FACU	
Forbs			
velvetleaf	*Abutilon theophrasti*	UPL	
mugwort, Douglas' wormwood	*Artemisia douglasiana*	FAC	
black mustard	*Brassica nigra*	NL	
Italian thistle	*Carduus pycnocephalus* L. *subsp. pycnocephalus*	NL	
yellow star-thistle	*Centaurea solstitialis*	NL	
chicory	*Cichorium intybus*	FACU	
field bindweed	*Convolvulus arvensis*	NL	
Canadian horseweed	*Conyza canadensis*	FACU	
long-beaked filaree	*Erodium botrys*	FACU	
fennel	*Foeniculum vulgare*	NL	
cutleaf geranium	*Geranium dissectum*	NL	
hairy cat's ear	*Hypochaeris radicata*	FACU	
bird's foot trefoil	*Lotus corniculatus*	FAC	
broad-leaf pepperwort	*Lepidium latifolium*	FAC	
Hyssop's loosestrife	*Lythrum hyssopifolia*	OBL	*L. hyssopifolium* in NWPL (USDA 2012).
alkali mallow	*Malvella leprosa*	FACU	
bur-clover	*Medicago polymorpha*	FACU	
dock-leaf smartweed	*Persicaria lapthifolia*	FACW	formerly *Polygonum lapthifolia*
narrowleaf (English) plantain	*Plantago lanceolata*	FAC	
wild radish	*Raphanus sativus*	NL	
curly dock	*Rumex crispus*	FAC	
Old Man in the Spring	*Senecio vulgaris*	FACU	
Puncture vine	*Tribulus terrestris*	NL	
Purple-top vervain	*Verbena bonariensis*	FACW	
common vetch	*Vicia sativa*	FACU	
cocklebur	*Xanthium strumarium*	FAC	
Grasses and Grass-like Plants			
slender wild oat	*Avena barbata*	NL	
ripgut brome	*Bromus diandrus*	NL	
soft chess	*Bromus hordeaceus*	FACU	
Santa Barbara sedge	*Carex barbarae*	FAC	
Bermudagrass	*Cynodon dactylon*	FACU	
umbrella sedge	*Cyperus eragrostis*	FACW	
saltgrass	*Distichlis spicata*	FAC	
Mediterranean barley	*Hordeum marinum* ssp gussoneanum	FAC	
foxtail barley	*Hordeum murinum* ssp leporinum	FACU	
soft rush	*Juncus effusus*	FACW	
Italian ryegrass	*Lolium multiflorum*	NL (FAC)	*Festuca perennis* in Baldwin et al. 2012
perennial ryegrass	*Lolium perenne*	FAC	*Festuca perennis* in Baldwin et al. 2012
miniature lupine	*Lupinus bicolor*	NL	
cultivated rice	*Oryza sativa*	OBL	
dallisgrass	*Paspalum dilatatum*	FAC	
rabbitsfoot grass, annual beard grass	*Polypogon monspeliensis*	FACW	
common tule	*Schoenoplectus acutus*	OBL	formerly *Scirpus acutus* var. *occidentalis*
Johnsongrass	*Sorghum halepense*	FACU	
broadleaf cattail	*Typha latifolia*	OBL	
Floating Plants			
mosquitofern	*Azolla filiculoides*	OBL	

Notes:

1.Taxonomy follows current nomenclature per the Jepson Manual (Baldwin et al. 2012) and USDA Plants web site accessed at http://plants.usda.gov/java/.

2. **Boldface** entries indicate that plant samples were collected.

3. Wetland Indicator Status taken from the National Wetland Plant List (NWPL) (USDA 2012) available at http://plants.usda.gov/wetland.html or taken from Reed (1997) with status shown in parentheses when the species was not listed in the USDA Wetland Plant List (2012).

Wetland Indicator Status abbreviations defined as follows:

NL = Not Listed. Assumed to be UPL unless otherwise indicated in parentheses.

OBL (Obligate) = Occurs almost always (estimated probability 99%) under natural conditions in wetlands

FACW (Facultative Wetlands) = Usually occurs in wetlands (estimated probability 67 to 99%) but occasionally found in non-wetlands

FAC (Facultative) = Equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66%)

FACU (Facultative Upland) = Ususally occurs in non-wetlands (estimated probability 67 to 99%) but occasionally found on wetlands (estimated probability 1 to 33%)

A positive (+) or negative (-) sign indicates a placement in either the higher or lower end of the frequency range; whereas * indicates a tentative status.