

*Draft Swainson's Hawk Habitat Assessment*  
**FORMER SPRECKELS SUGAR FACILITY**  
**INDUSTRIAL AREA**  
Woodland, California  
**WKA No. 7864.03**  
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## **INTRODUCTION**

Wallace-Kuhl & Associates, Inc. (WKA) completed a Swainson's hawk habitat assessment in support of an ecological evaluation of 40600 County Road 18C, Woodland, California, a proposed concrete batch plant redevelopment site (site). As a part of this assessment, WKA reviewed State and Federal databases for issues of ecological concern, and completed a field verification of ecological conditions on January 2, 3, 5, 14, and 15, 2008. This assessment was conducted for 90 acres, which included the 45 acre existing Spreckels production area and a proposed 45 acre panel storage area, which consisted of a fenced storage area and building, and the former mud ponds.

The need for a Swainson's hawk habitat assessment was identified in WKA's January 29, 2008 Biological Assessment of the site, due to the mixed-industrial and agricultural nature of the local area. The Swainson's hawk is a State of California Threatened species managed by the California Department of Fish and Game (CDFG). The potential for use of the site by Swainson's hawks for foraging, perching and nesting is described in this document.

### **Site Description**

The site consisted of a proposed 90 acre redevelopment in unincorporated Yolo County, California (Figure 1). The site is located at 40600 County Road 18C, approximately 4 kilometers (km) (2.5 miles [mi]) northeast of Woodland, Yolo County, California, and was comprised of portions of Yolo County Assessor's Parcel Numbers (APNs) of 027-250-05 and 27-250-06.

The site was depicted on the 1981 United States Geological Survey (USGS) 7.5 Minute topographic map of the *Woodland Quadrangle* and the 1978 USGS 7.5 Minute topographic map of the *Grays Bend Quadrangle* as developed land (Figure 2). The site is located within Section 16, Township 10 North, Range 2 East, Mount Diablo Base and Meridian; approximately Latitude 38° 42' 33.5" N Longitude 121° 45' 5.8" W.



The site was comprised of an industrial sugar processing facility on the west side of County Road 100B; and, on the east side of County Road 100B, a fenced storage area and an associated building, and the former mud ponds. Surrounding land use includes a rail terminal, active public roads, a horse stable, active cropland, industrial waste areas, a bulk chemical storage facility, a feedlot operation, and scattered rural residences.

### **General Swainson's Hawk Ecology**

The Swainson's hawk (*Buteo swainsoni*) is a medium-sized hawk with long, pointed wings and a long, square tail. Adult hawks are 48-56 centimeters (cm) (19-22 inches [in]) in length with a wingspan of 119-145 cm (47-57 in), and an average weight of 0.82 kilograms (kg) (1.81 pounds [lbs]) for males and 1.11 kg (2.44 lbs) for females, respectively (Brown, 1996). Swainson's hawks have light and dark color phases (morphs) with several variations. Hawks of the light morph have a whitish forehead and white patch on the throat below the bill. The remainder of the head, sides of the throat, patch on its chest, and all other upper body parts are dark brown (Brown, 1996). The belly is white and barred with brown. Hawks of the dark morph are entirely dark brown, except for a patch under the tail. Within northern California, the dark morph constitutes 35% of the population (Brown, 1996). California also has a rufous-colored variant of the dark morph with lighter brown and rusty barring on its underparts. All but the darkest hawks show a contrast between the lighter wing linings to the darker flight feathers (Dunn and Alderfer, 2006). The Swainson's hawk was listed as a State Threatened species on April 17, 1983 (CDFG, 2007d).

Nesting Swainson's hawks are still locally common to rare in the Central Valley and Great Basin (Woodbridge, 1998). Central Valley populations are centered in Sacramento, San Joaquin, Solano, and Yolo counties. Central Valley population estimates range from 280 to as high as 1,000 nesting pairs (Bloom, 1980; Woodbridge, 1998). Another relatively large population resides in the northern San Joaquin Valley. In the 1980's, an estimated 375 pairs existed in California, but not all of them nested (Brown, 1996). A study conducted in 1994 estimated the statewide population as approximately 800 pairs (CDFG, 2000).

Swainson's hawks breed from late March to late August, with young usually fledging by July. Nests are built on trees or utility poles at 1-30 meters (m) (4-100 feet [ft]) from the ground (CDFG, 2000). Nest materials consist of sticks and plant parts of sagebrush, Russian thistle, and other weeds (Fitzner, 1980). The female performs almost all the incubation, except when the male relieves the female during brief periods for feeding (Woodbridge, 1998). The incubation period is 34-35 days (Fitzner, 1980).



Young hawks are able to venture out onto branches at 27-33 days and can fly at 38-46 days (Fitzner, 1980). Young hawks may return to nests to be fed by parents or roost for up to 10 days following fledging. Fledgling success has been estimated at 0.6 per pair (Craighead and Craighead, 1956). Juveniles remain within the parental territory for 2-4 weeks after fledging and are dependant on adults for food (Fitzner, 1980; Estep, 1989). Length of stay within the parental territory may depend on food supply. Sometimes in agricultural areas, juveniles depart parental territories earlier and congregate at insect concentrations or agricultural harvest operations where food is more abundant (Estep, 1989; Woodbridge, 1998). Swainson's hawks have a life span of 15-20 years (Woodbridge, 1998).

Swainson's hawks forage over open habitats and often hunt from perches such as power poles and fence posts. During the breeding season, Swainson's hawks are known to travel long distances (up to 29 km or 18 mi) in search of habitats with abundant prey (Estep, 1989; Woodbridge, 1991). In agricultural habitats, foraging (feeding) activity is closely associated with harvest or cultivation activities that expose prey to predation (Estep, 1989; Woodbridge, 1991).

The diet of nesting Swainson's hawks includes ground squirrels, voles, and other small mammals (Woodbridge, 1998). In Central California, territory density appears to be positively associated with the availability of the California vole (Estep, 1989). Swainson's hawks in the Central Valley of California preyed on a wide variety of species, ranging from small mammals and birds to toads, crayfish, and insects. Swainson's hawks have been observed using a variety of habitat types, including various prairie, shrub steppe, desert, and agricultural habitats. Swainson's hawks require large, open grassland with suitable prey for foraging and suitable trees for nesting (CDFG, 2000).

This species was not observed on site during the field reconnaissance, but this was obviously limited by the seasonal migration of this species away from the region in winter. The industrialized nature of the site generally precludes Swainson's hawk nesting and foraging, although some suitable habitat exists on the east side of County Road 100B. In addition to the potential foraging habitat, WKA estimated that 10 mature trees are potentially suitable for perching and nesting habitat on the site (CDFG, 1994).

### **Potential Swainson's Hawk Habitat Use**

A species' survival is closely tied to the availability of habitat for each of its life stages. In the case of the Swainson's hawk, the Central Valley has both foraging and nesting habitat. This provides food and shelter for raising the next generation of hawks. The Riparian Bird





Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California (Woodbridge, 1998) identifies the following issues as the primary threats to the survival of the Swainson's hawks:

- Loss of preferred nesting habitat in mature riparian forest;
- Loss or adverse modification of high-quality foraging habitat to development or conversion to incompatible crop types; and,
- High mortality due to pesticide use on migration route and wintering areas.

The following sub-sections identify the methods used to assess the total area of potential Swainson's hawk habitat.

### ***Foraging habitat***

Swainson's hawk foraging habitat has been defined by the CDFG (1994) as: "Preferred foraging habitats for Swainson's hawks include: alfalfa; fallow fields; beet, tomato, and other low-growing row or field crops; dry-land and irrigated pasture; rice land (during the non-flooded period); and cereal grain crops (including corn after harvest). Unsuitable foraging habitat types include crops where prey species (even if present) are not available due to vegetation characteristics (e.g., vineyards, mature orchards, and cotton fields, dense vegetation)."

Potential foraging habitat was assessed by field observations and a GIS analysis. The site was classified into buildings, roads, and parking areas (not habitat); water and barren lime areas (not habitat); and, berms and vegetated strips (potential foraging habitat).

Where mixed ruderal areas and exposed lime were associated, the matrix was considered potential foraging habitat. The building, road, and parking features on the western and portions of the eastern half of the site do not support significant prey populations, neither do the barren lime areas and open water portions of the eastern half of the site. However, the berms and ruderal strips had either moderate vegetative cover or potential for California ground squirrel burrows, and were considered potential Swainson's hawk foraging habitat. No voles were observed at the site.

The area with the mud ponds and associated berms has been in industrial use from 1937 to the present, and has undergone significant modifications over that time. In order to capture some of the variation, a conservative approach was used in the classification to include areas that may be available even temporarily at the inside toe of the bermed areas and areas that had significant



lime, but were not completely barren, as potential foraging habitat. Areas were excluded that were predominately gravel or paved, buildings and other structures, barren lime or open water.

### ***Potential perching and nesting habitat***

Nesting habitat was assessed by field observations and review of the California Natural Diversity Database (CNDDDB). The CNDDDB identified 2 nests approximately 0.1 and 0.38 km (0.06 and 0.24 mi) from the eastern edge of the site boundary.

“Although not an obligate riparian species, the availability of nesting habitat is strongly tied to the distribution of riparian forest or riparian trees in much of the Central Valley portion of the species' range in California. Loss of small areas of remnant riparian forest within areas of highly suitable foraging habitat can result in permanent losses of Swainson's hawk territories,” (Woodbridge, 1998).

The site is not associated with the *preferred* riparian forest or closed-canopy native forest structural features. The site does contain 10 mature trees that may be suitable for Swainson's hawk perching and nesting. These trees are located along the eastern fenceline of the property. Several of the trees appear to have matured to the point that the canopy has thinned and the major branches have started falling (senesced). The proposed project does not appear to have any direct impacts associated with this treeline.

### **Discussion**

The site lacks significant areas of the previously described *preferred* foraging habitat types. Some potential foraging habitat of moderate quality is available in the eastern portion of the site, predominately the less-disturbed margins of the historic mud ponds, where California ground squirrels have established. The remaining ruderal portions are actively tilled to reduce non-native weed invasion and to provide a firebreak.

The tilling has exposed and spread significant areas of lime waste material and altered the configurations of the historic mud ponds. These modifications of the historic mud pond area have resulted in several areas of alternating low and high permeability, and altered soil pH. The tilled area superficially appears to be ruderal grassland, but upon closer examination (Figures 4 and 5), only has limited grassland structural characteristics (artificially maintained, no developed thatch layer, poor to undeveloped soils, in a historic riparian 100 year floodplain) and is mainly patchy lime fields.



The areas on the east side of County Road 100B that have potential foraging value for Swainson's hawks are essentially the areas between the historic mud ponds, and portions of the berms that contained the ponds. The result is a series of vegetated strips that provide cover and food for ground squirrels, within a matrix of lime piles and ponds that lacks such characteristics. The locations of the portions of the site identified as foraging and nesting habitat are presented on Figure 3. Table 1 identifies the estimated acres by class.

Table 1. Estimated Acres of Foraging and Nesting Habitat.

<b>Class</b>	<b>Acres*</b>	<b>Habitat Potential</b>
Buildings, Roads, and Parking Areas	52.49	None
Water and Barren Lime Areas	18.97	None
Berms and Vegetated Strips	18.05	Moderate Foraging Potential
Treeline	Approx. 10 mature trees	Moderate Nesting Potential
<b>Total site</b>	<b>89.60</b>	

\*All acreage estimates are approximate and based on California State Plane Projection Zone II georeferencing, using the known property corners.



## **Conclusions**

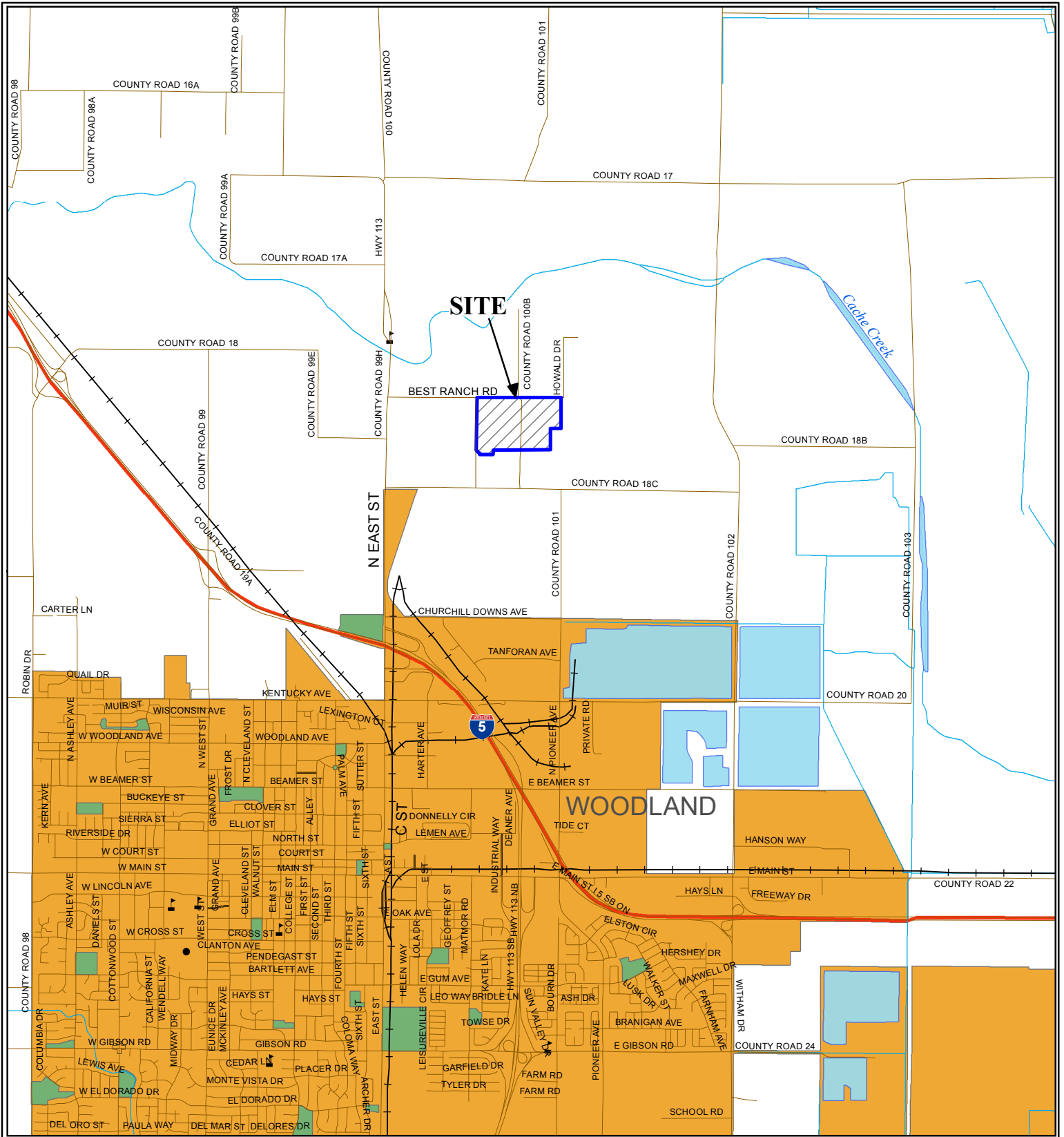
On the basis of the field reconnaissance and GIS analysis of the site, it is estimated that a total of 10 mature trees with potential perching and nesting habitat exist, and an estimated total of 18.05 acres of potential foraging habitat area is available for Swainson's hawks.



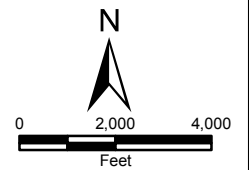
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[http://www.prbo.org/calpif/htmldocs/riparian\\_v-2.html](http://www.prbo.org/calpif/htmldocs/riparian_v-2.html)





Adapted from Data Provided by Yolo County, 2007  
 Projection: NAD 83, California State Plane, Zone II



**VICINITY MAP**  
**FORMER SPRECKELS SUGAR FACILITY**  
**INDUSTRIAL AND MUD PIT AREAS**  
 Woodland, California

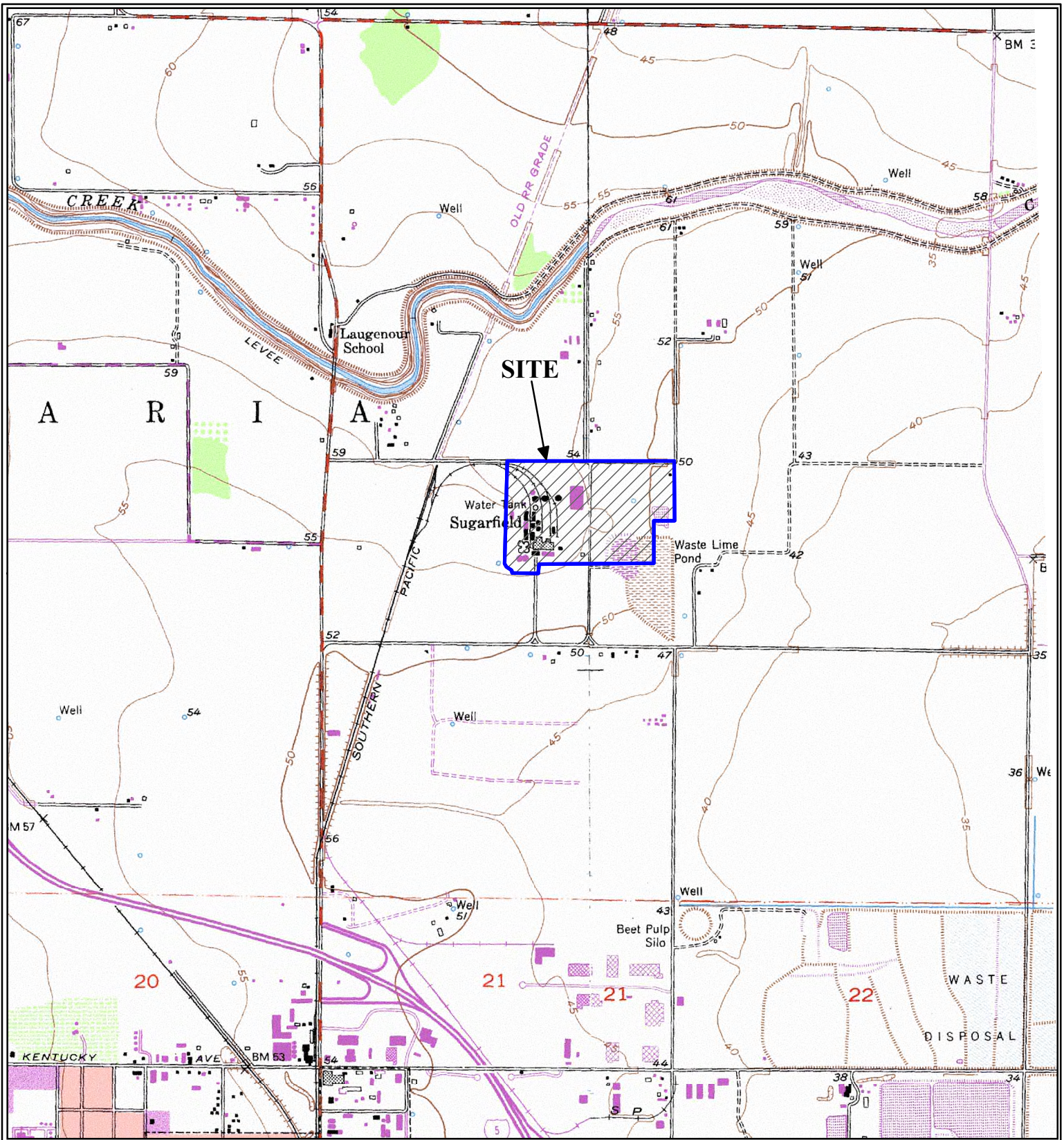
**FIGURE 1**

DRAWN BY	JG
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PROJECT MGR	ER
DATE	1/08

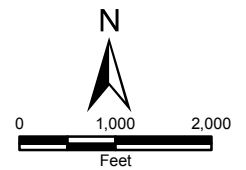
**WKA NO. 7864.03**







Adapted from U.S. Geological Survey 7.5 minute topographic map of the Woodland and Grays Bend quadrangles, California, 1981 and 1978  
 Provided By The California Geospatial Information Library, 2007  
 Projection: California State Plane, Zone II

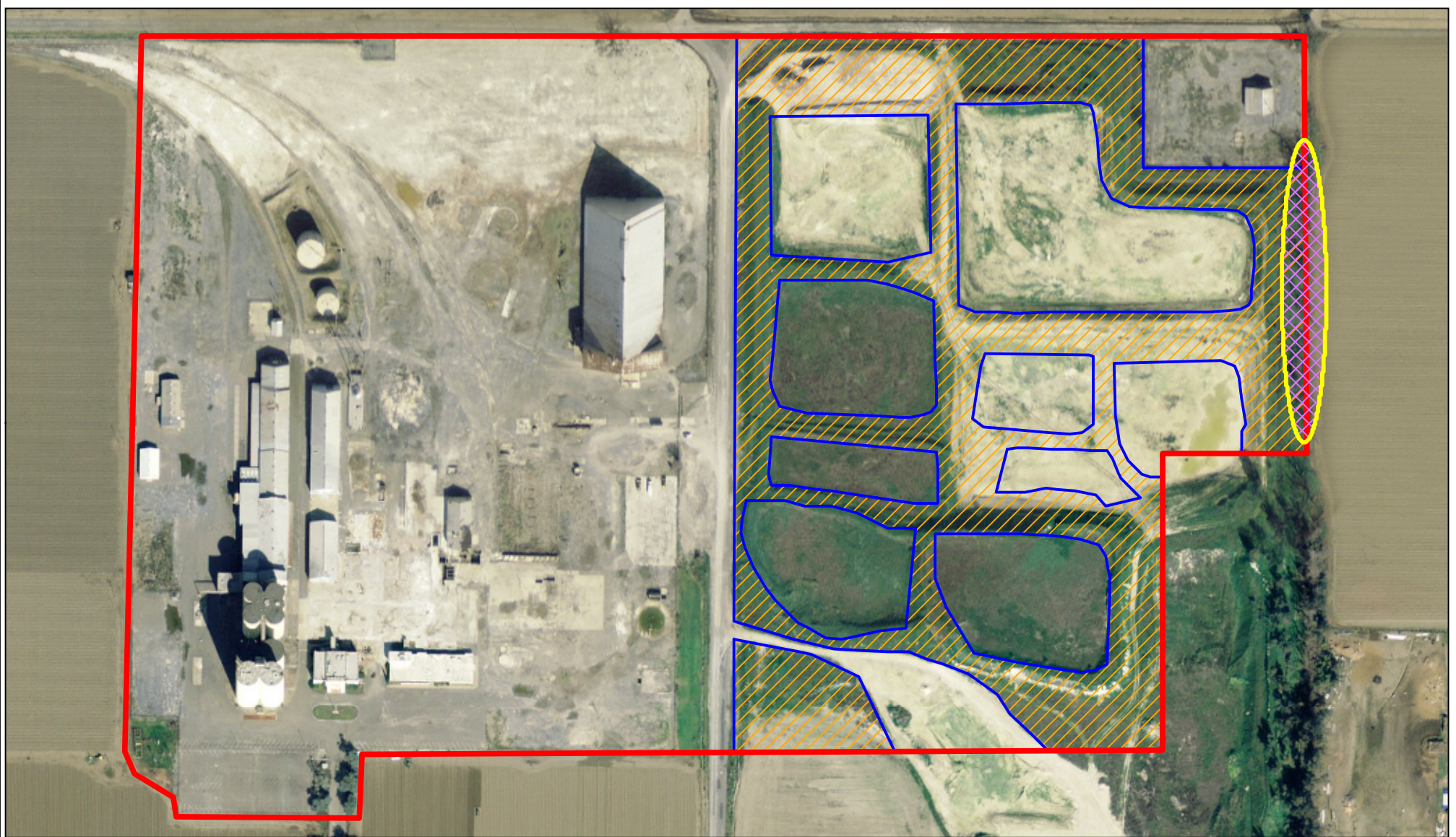


**TOPOGRAPHIC MAP**  
**FORMER SPRECKELS SUGAR FACILITY**  
**INDUSTRIAL AND MUD PIT AREAS**  
 Woodland, California

<b>FIGURE 2</b>	
DRAWN BY	JG
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DATE	1/08
<b>WKA NO. 7864.03</b>	






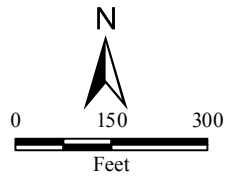




Habitat delineation based on field work and interpretation of aerial photography provided by ESRI ArcGIS Online, 2008  
 Projection: NAD 83, California State Plane, Zone II

**LEGEND**

-  Site boundary
-  Potential foraging habitat
-  Potential nesting habitat



**POTENTIAL SWAINSON'S HAWK HABITAT**  
 FORMER SPRECKLES SUGAR FACILITY  
 INDUSTRIAL AND MUD PIT AREAS  
 Woodland, California

<b>FIGURE 3</b>	
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DATE	2/08
<b>WKA NO. 7864.03</b>	





Photo 1: View of the industrial areas on the west side of County Road 100B, facing north.



Photo 2: View of mud pond complex, facing west.



Photo 3: View of detached industrial area on the east side of County Road 100B, facing east.



Photo 4: View of mud pond complex, facing south. Vegetated berms visible in background.

**SITE PHOTOGRAPHS**  
**SPRECKELS FORMER SUGAR FACILITY**  
**INDUSTRIAL AND MUD PIT AREAS**  
 Woodland, California



**FIGURE 4**

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DATE	1/08

**WKA NO. 7864.03**



Photo 5: View of potential nesting habitat.



Photo 6: View of mixed silt and lime waste.



Photo 7: View from berm, overlooking mud pond complex, facing west.



Photo 8: Typical view of lime waste and tumbleweed, facing northern mud pond berm.



**SITE PHOTOGRAPHS**  
**SPRECKELS FORMER SUGAR FACILITY**  
**INDUSTRIAL AND MUD PIT AREAS**  
 Woodland, California

**FIGURE 5**

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DATE	1/08

**WKA NO. 7864.03**