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**WILLOW ROCK ENERGY STORAGE CENTER
SWAINSON'S HAWK FOCUSED SURVEY**



WILLOW SPRINGS, KERN COUNTY, CALIFORNIA

Prepared for:

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February 2024

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1.0 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) was contracted by GEM A-CAES (GEM), a subsidiary of Hydrostor Inc. (Hydrostor) to conduct a focused survey for the Swainson's hawk (*Buteo swainsoni*) at the site of the proposed Willow Rock Energy Storage Center (project) in the unincorporated community of Ansel, Kern County, California. This report provides methods, results, and discussion of the survey. All figures referenced in this report are provided in Appendix A. Photographs are available upon request.

1.1 Project Description

The proposed project includes the development of an energy storage facility (approximately 190 acres) and approximately 20 miles (300 acres) of electrical transmission lines connecting to the existing Southern California Edison Whirlwind Substation. The total area, including the energy storage facility, transmission lines and their corridor (125-foot buffer), is approximately 490 acres and will be herein collectively referred to as the "project site" unless otherwise specified. In general, GEM proposes to construct and operate a 500-megawatt (MW) advanced compressed air energy storage (A-CAES) facility deploying Hydrostor proprietary A-CAES technology. The site will be designed to store 500 MW for up to 14 hours and deliver up to 4,000 megawatt hours (MWh) over an 8-hour period when discharging.

1.2 Project Location and Topography

The project site is located on private property in and around the rural community of Ansel, just north of State Route (SR) 138, south of SR 58, east of Interstate 5, and west of Edwards Air Force Base (Figure 1, Regional Location).

The energy storage facility is located on the 7.5-minute Soledad Mountain, California, U.S. Geological Survey (USGS) topographic quadrangle (topo quad). The transmission line route and variances are on the Soledad Mountain, Rosamond, Fairmont Butte, and Little Buttes topo quads. The project site is located within portions of Sections 31, 32, and 33 of Township 10 North and Range 12 West; portions of Sections 36 of Township 10 North and Range 13 West; portions of Sections 1, 2, 11, 14, 15, 16, 17, and 18 of Township 9 North and Range 13 West; portions of Sections 13, 14, 15, 16, 17, and 18 of Township 9 North and Range 14 West; and portions of Sections 13, 14, and 23 of Township 9 North and Range 15 West (Figure 2, Historic USGS Topographic Map).

Topography in the project site slopes from northwest to southeast with flat areas in the southern portions and gently rolling hills in the central portion of the project site. Elevations range from approximately 2,400 feet (732 meters) in the southeast corner of the transmission line at the corner of Rosamond Boulevard and 65th Street W to 2,720 feet (830 meters) along Dawn Road, just south of an existing water tank facility (Figure 3, Local Vicinity).

2.0 REGULATORY FRAMEWORK

2.1.1 Migratory Bird Treaty Act

Treaties signed by the United States, Great Britain, Mexico, Japan, and the republics of the former Soviet Union make it unlawful to pursue, capture, kill, and/or possess, or attempt to engage in any such conduct regarding, any migratory bird, nest, egg, or parts thereof listed in this document.. Impacts include direct disturbance to/destruction of nests, eggs, and birds, as well as indirect effects such as loud construction noises (e.g., drilling, operation of heavy equipment, etc. in excess of 60 decibels at the nest site) and increased site activities (e.g., moving vehicles, use of guard dogs, presence of personnel) in close proximity to active nests. (USFWS 2023).

2.2 State of California

2.2.1 California Endangered Species Act

The California Endangered Species Act (CESA) is similar to the federal Endangered Species Act (FESA) but is administered by the California Department of Fish and Wildlife (CDFW). The CDFW is authorized to enter into "memoranda of understanding" with individuals, public agencies, and other institutions to import, export, take, or possess state-listed species for scientific, educational, or management purposes. The CESA prohibits the take of state-listed species except as otherwise provided in state law. Unlike the FESA, the CESA applies the take prohibitions to species currently petitioned for state-listing status (candidate species). State lead agencies are required to consult with the CDFW to ensure that actions are not likely to jeopardize the continued existence of any state-listed species or result in the destruction or degradation of occupied habitat.

2.2.2 California Environmental Quality Act

The basic goal of the California Environmental Quality Act (CEQA) is to retain a high-quality environment now and in the future. The specific goals are for California's public agencies to:

- Identify any potentially significant environmental effects of their actions; and
- Avoid those significant environmental effects, where feasible; and
- Minimize potentially significant environmental effects, where feasible.

CEQA applies to "projects" proposed to be undertaken or requiring approval by state and/or local governmental agencies. Projects are activities that have the potential to have a physical impact on the environment and may include the enactment of zoning ordinances, issuance of conditional use permits, and approval of tentative subdivision maps. Where a project requires approvals from more than one public agency, CEQA requires one of these public agencies to serve as the "lead agency."

A "lead agency" must complete the environmental review process required by CEQA. The most basic steps of the environmental review process are:

- Determine if the activity is a "project" subject to CEQA.
- Determine if the "project" is exempt from CEQA.

If the activity is a CEQA "project" and not otherwise exempt, perform an Initial Study to identify the potential environmental impacts of the project and determine whether the identified impacts are "significant." Based on its findings of "significance," the lead agency prepares one of the following environmental review documents:

- Negative Declaration if it finds no "significant" impacts

Mitigated Negative Declaration if it finds potentially "significant" impacts that can be avoided and minimized to a level of less than significant.

Environmental Impact Report (EIR) where it finds there is a "fair argument" that the project may result in potentially "significant" effects.

While there is no ironclad definition of "significance," Article 5 of the CEQA Guidelines provides criteria to lead agencies for determining whether a project may have significant effects.

The purpose of an EIR is to provide state and local agencies and the public with detailed information on the potentially significant environmental effects that a proposed project is likely to have and to provide ways in which those effects may be minimized and indicate alternatives to the project.

2.2.3 Sections of the California Fish and Game Code Pertaining to the Protection of Birds

Section 3503 of the California Fish and Game Code makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3505.5 of the code makes it unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey, i.e.: owls, hawks, eagles, etc.) or to take, possess, or destroy the nest or eggs of any bird of prey. Section 3513 makes it unlawful to take or possess any migratory nongame bird as designated in the MBTA.

3.0 BACKGROUND ON THE SWAINSON'S HAWK

The Swainson's hawk, a member of the Accipitridae (e.g., birds of prey family), is a long-winged, large hawk with pointed wingtips. The Swainson's hawk was listed as a threatened species by the California Fish and Game Commission due to loss of habitat and decreased numbers throughout the state of California. The Swainson's hawk is protected by the MBTA (USFWS 2023) and by California Fish and Game Code Sections 3503, 3503.5, 3513, and 3800.

In the Antelope Valley areas of Kern County, Swainson's hawks are known to have historically nested in Joshua tree woodlands and foraged in grasslands and native desert scrub communities. Currently, they nest in Joshua tree woodlands, ornamental roadside trees, and windrow or perimeter trees in active and historical agricultural areas (CEC and CDFW 2010). Foraging habitat includes dry land and irrigated pasture, alfalfa, fallow fields, low-growing row or field crops, new orchards, and cereal grain crops. Swainson's hawks may also forage in grasslands, Joshua tree woodlands, and other desert scrub habitats that support a suitable prey base. Botta's pocket gopher (*Thomomys bottae*) dominates the prey base of agriculturally based pairs, while Swainson's hawks nesting in natural desert habitats consume a wider variety of prey species (CEC and CDFW 2010). While California's Central Valley Swainson's hawk

population winters in Mexico, Central America, South America, and a small percentage in the Central Valley, the migration habits of the Kern County populations are unknown (CEC and CDFW 2010).

The most recognized threat to Swainson's hawks is the loss of their native foraging and breeding grounds due to conversion of habitat to urban landscapes. Other threats include climate change, infrastructure placement, disease, pesticide poisoning, and electrocution (CDFW 2023a). Swainson's hawks have high nest site fidelity, meaning they return to the same site year after year (Estep 1989; Woodbridge et al. 1995). This may limit exchange of individual birds between distant breeding groups (Hull et al. 2008). Hull et al. (2008) found evidence suggesting that the Central Valley population has had little recent genetic exchange with other populations east of the Sierra Nevada. Due to the geographical isolation of the Antelope Valley Swainson's hawk population from other breeding populations, together with the species' high site fidelity, the CEC and CDFW believe that rapid re-colonization of the Antelope Valley would be unlikely if nesting pairs were lost (CEC and CDFW 2010).

4.0 METHODS

4.1 Literature Review and Records Search

A literature review and record search were conducted to identify Swainson's hawk occurrences in the project vicinity. The review included, but was not limited to:

- A report from the CDFW California Natural Diversity Data Base (CNDDB) for a 5-mile radius of the project site (CDFW 2023b)
- Aerial photographs
- Pertinent documents from the WSP USA library and project files (e.g., other biological surveys from the general vicinity)

4.2 Focused Surveys

Survey methods generally followed the latest accepted CDFW Swainson's hawk protocol specifically referencing Antelope Valley (CEC and CDFW 2010). CDFW protocol designates 10 surveys to be conducted over four survey periods, aiming to capture progressive nesting behaviors and activity.

- **Survey Period I:** Preliminary survey of potential nest locations_(optional)
- **Survey Period II:** Surveys targeting initial occupancy of traditional nest territories and nesting behaviors
- **Survey Period III:** Direct monitoring of known/identified active nests to confirm incubation
- **Survey Period IV:** Direct monitoring of known/identified active nests to confirm young rearing and final nest search.

Per the CDFW protocol, qualified WSP USA biologists conducted 10 focused surveys between March and June 2023 (Table 1). Due to the size of the project, several biologists covered the survey area (project site, including a 0.5-mile buffer) in Survey Periods II and III over the course of 5 days for the three required

surveys. These surveys included the identification of all occupied Swainson’s hawk nest trees, suitable nest trees, and documentation of nest competitors recorded with a global positioning system (GPS). Except for rural residential parcels with suitable nesting trees, most of the developed areas within the survey area were excluded from the surveys due to a lack of suitable habitat for foraging and nesting. Table 1 presents the Swainson’s hawk survey period dates. Appendix A, Figure 4, Survey Areas, presents the surveyed areas.

Table 1. Swainson’s Hawk Survey Dates

Survey Date	Survey Period I	Survey Period II	Survey Period III	Survey Period IV
March 28, 2023	X	--	--	--
March 30, 2023	X	--	--	--
March 31, 2023	X	--	--	--
April 3, 2023	--	X	--	--
April 5, 2023	--	X	--	--
April 19, 2023	--	X	--	--
April 24, 2023	--	X	--	--
April 26, 2023	--	X	--	--
May 9, 2023	--	--	X	
May 10, 2023	--	--	X	
May 12, 2023	--	--	X	
May 22, 2023	--	--	X	
May 23, 2023	--	--	X	
June 8, 2023	--	--		X
June 20, 2023	--	--		X
June 26, 2023	--	--		X

Source: WSP USA 2023

Notes:-- = Survey not performed; X= Survey performed

Survey Personnel: Nathan Moorhatch, Dale Hameister, Melanie Bukovac, Phil Clevinger, Scott Crawford, Emily Urquidi, and Alegria Garcia.

5.0 RESULTS

Literature Review and Records Search

On May 19, 2021, during previous protocol-level surveys of the project area (Blackhawk 2021), one Swainson’s hawk pair and their associated active nest was documented within approximately 1.8 miles

(2.9 kilometers) north of the proposed transmission line alignment along Rosamond Boulevard. Nest failure at this location was confirmed on June 29 and July 13, 2021. This pair had utilized a native Joshua tree (*Yucca brevifolia*) for nesting and native open creosote bush scrub with Joshua trees intermixed as foraging habitat. This pair and territory had not been previously documented in the long-term studies of the Antelope Valley Swainson's hawk population and was not highlighted in any of the CNDDDB records in the literature review relevant to the surveys (Blackhawk 2021). The nearest CNDDDB known record of Swainson's hawk is approximately 8 miles west of the WRESC site and 3 miles north of the transmission line alignment (CDFW 2023b).

5.1 Focused Surveys

A single Swainson's hawk nest was identified during protocol-level surveys completed by WSP in 2023, approximately 1.8 miles (2.9 kilometers) north of the proposed transmission line alignment along Rosamond Boulevard (Figure 5, Swainson's Hawk Sightings and Nest Locations). This is the same nest that was identified during surveys in 2021 (Blackhawk 2021) and is located in an off-site location. This nest was monitored throughout the entire nesting season by WSP biologists and was determined to be successful, producing two fully fledged offspring. Two independent Swainson's hawk observations were also noted within the survey area. One was located just south of an existing water tank on a rocky outcrop north of Dawn Road and between 20th Street West and 30th Street, West and the second was located south of Rosamond Boulevard and east of 140th Street West (Figure 5, Swainson's Hawk Sightings and Nest Locations). It is possible that these sightings were of the same nesting pair already identified as present within the survey area, as there were no other signs of nesting activity or behavior in the surrounding area.

While a large portion of the project site consists of open suitable foraging habitat (creosote bush- and saltbush-dominated vegetation communities), nesting opportunities are limited to areas that support suitable nesting; trees, including large western Joshua trees; and landscaping and ornamental plantings, often in the form of windrows of the surrounding rural residences.

Focused surveys resulted in mapping a total of 78 suitable potential nest sites. Of the 78 total suitable nest sites observed within the half-mile buffer surrounding the project, Swainson's hawks only occupied one. Of the remaining suitable potential nest trees, two were occupied by red-tailed hawks (*Buteo jamaicensis*) and 57 by common ravens (*Corvus corax*). These competitors were observed in trees and on electrical transmission line distribution poles, lattice towers, and other structures within the survey area.

6.0 DISCUSSION

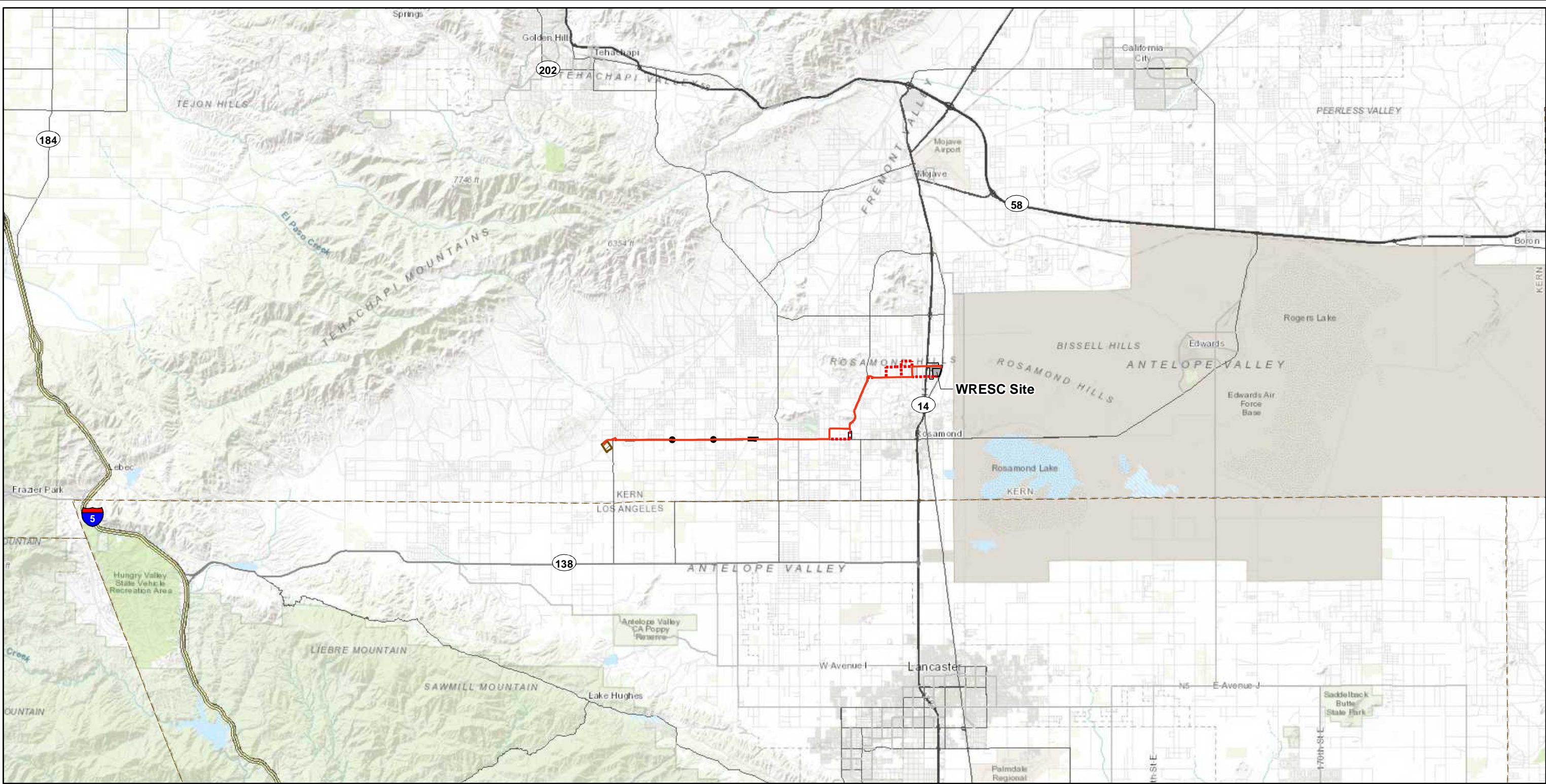
Due to the detection of Swainson's hawk within the vicinity of the proposed project, and the presence of both suitable foraging and nesting habitat, and availability of contiguous suitable Swainson's hawk habitat, the project has the potential to adversely affect Swainson's hawks both temporarily and permanently. Based on the requirements of the *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern*

Counties, California, if an active nest site is found within a half mile of the proposed project, a *Swainson's Hawk Monitoring and Mitigation Plan* must be prepared by a qualified biologist approved by and in consultation with the CDFW and the appropriate lead agency prior to construction to reduce temporary and permanent impacts to less than significant levels (CEC and CDFW 2010). Since the project site is more than 1.5 miles from the nearest known nest location, a *Swainson's Hawk Monitoring and Mitigation Plan* will not be required. Prior to initial vegetation removal and soil disturbance, WSP recommends a Worker Environmental Awareness Program be completed for all construction workers. Also, a biological monitor should be present to ensure that construction activities do not affect any foraging Swainson's hawks.

7.0 REFERENCES

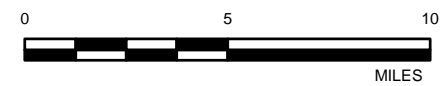
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- U.S. Fish and Wildlife Service (USFWS). 2023. Migratory Bird Treaty Act of 1918. <https://www.fws.gov/law/migratory-bird-treaty-act-1918>
- Woodbridge B., K. K. Finley, and P. H. Bloom. 1995. Reproductive Performance, Age Structure, and Natal Dispersal of Swainson's Hawks in the Butte Valley, California. Journal of Raptor Research 29:187–192.

Appendix A Figures



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- LEGEND**
- Freeway
 - Major Road
 - Secondary Road
 - Local Connecting Road
 - Important Local Road
- Proposed Transmission Line**
- Preferred Route, Aboveground
 - Preferred Route, Underground
 - Route Options 1-6, Aboveground
 - Route Options 1-6, Underground
- Project Components**
- WRESC Site
 - Other Project Parcels
 - Project Boundary
 - SCE Whirlwind Substation



CLIENT
GEM A-CAES LLC



CONSULTANT	YYYY-MM-DD	2024-02-29
	DESIGNED	MK
	PREPARED	MK
	REVIEWED	SC
	APPROVED	VG/L

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
2. MAP SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

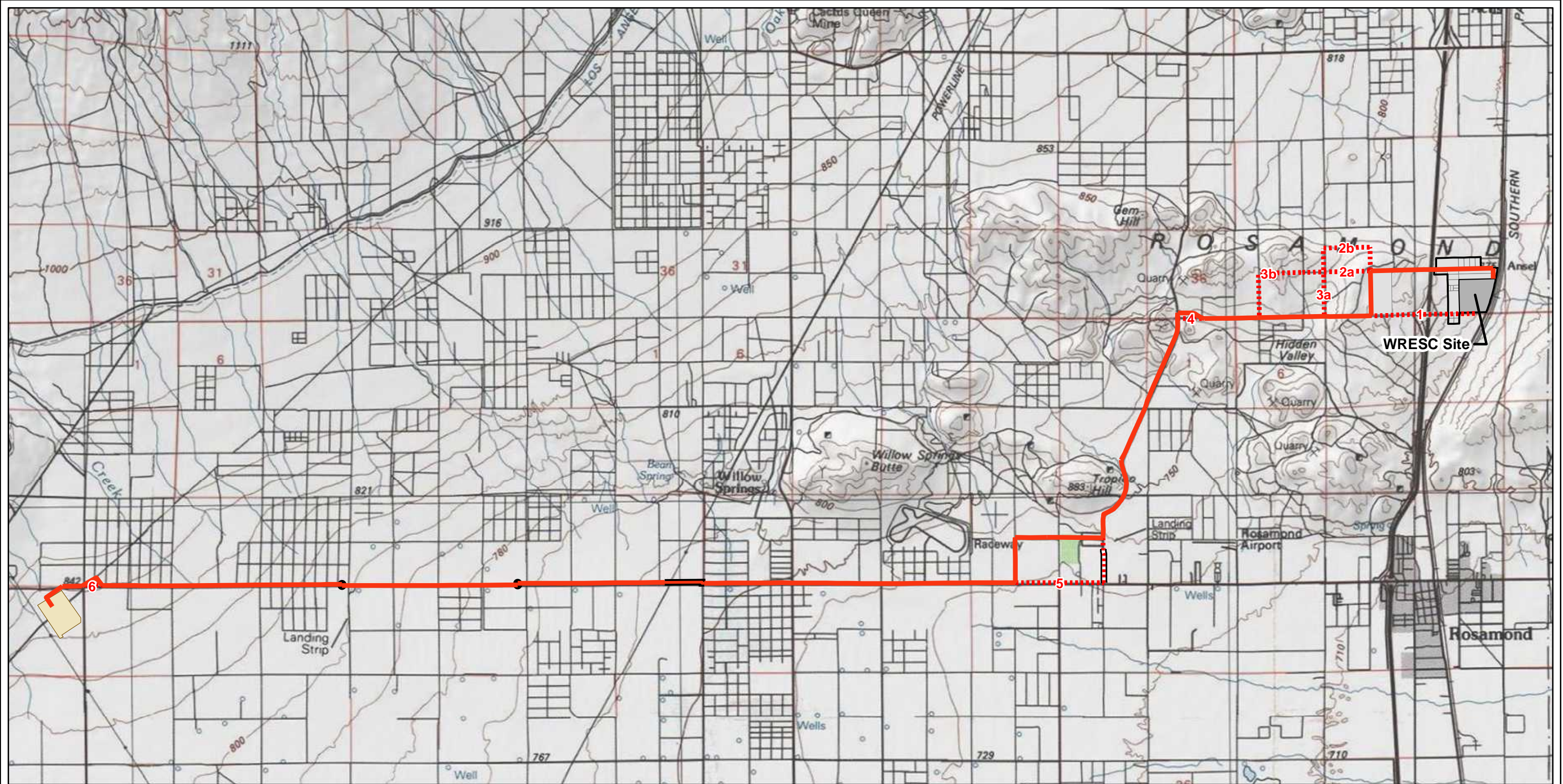
PROJECT
**WILLOW ROCK ENERGY STORAGE CENTER
BIOLOGICAL RESOURCES ASSESSMENT
SWAINSON'S HAWK FOCUS SURVEY**

**TITLE
REGIONAL LOCATION MAP**

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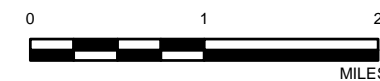
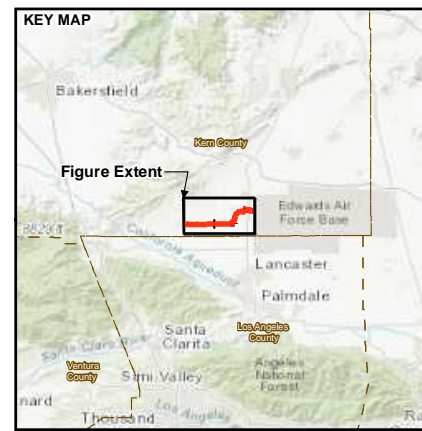
LEGEND

Proposed Transmission Line

- Preferred Route, Aboveground
- Preferred Route, Underground
- ⋯ Route Alternative (Options 1-6), Aboveground
- ⋯ Route Alternative (Options 1-6), Underground

Project Components

- WRESC Site
- Other Project Parcels
- Project Boundary
- SCE Whirlwind Substation



CLIENT
GEM A-CAES LLC

CONSULTANT



YYYY-MM-DD	2024-02-29
DESIGNED	MK
PREPARED	MK
REVIEWED	SC
APPROVED	VG/LL

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
 2. MAP SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
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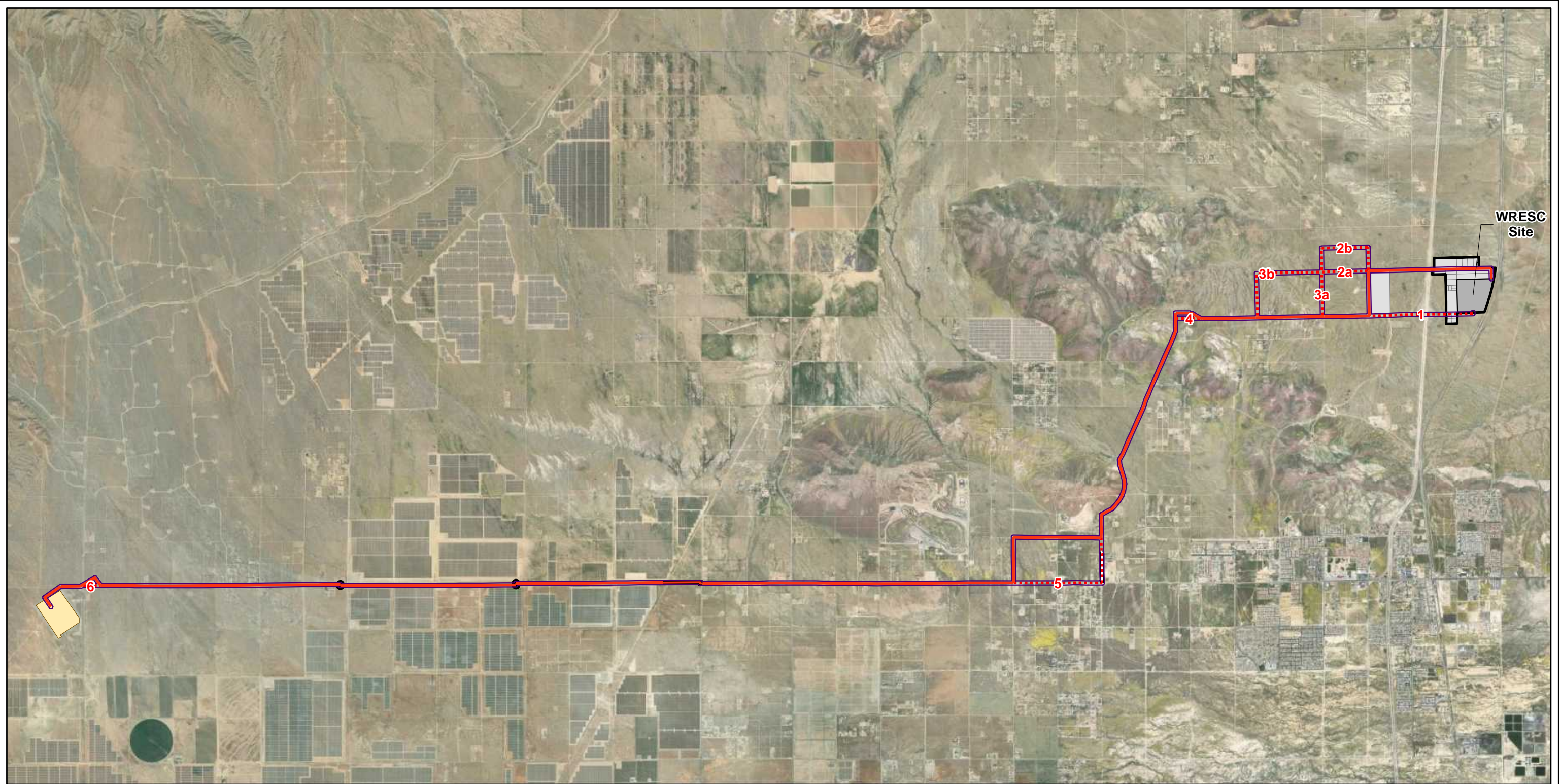
PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
BIOLOGICAL RESOURCES ASSESSMENT
SWAINSON'S HAWK FOCUS SURVEY

TITLE
HISTORIC USGS TOPOGRAPHIC MAP

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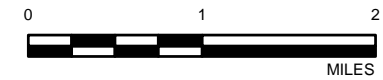
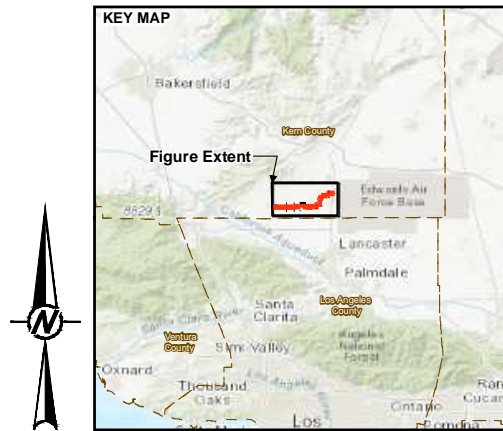
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LEGEND

- Proposed Transmission Line
- Preferred Route, Aboveground
- - - Preferred Route, Underground
- · - · - Route Options 1-6, Aboveground
- - - - - Route Options 1-6, Underground
- 125 ft Buffer Around Transmission Line
- WRESC Site
- Other Project Parcels
- Project Boundary
- SCE Whirlwind Substation



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GEM A-CAES LLC



CONSULTANT	YYYY-MM-DD	2024-02-29
	DESIGNED	MK
	PREPARED	MK
	REVIEWED	SC
	APPROVED	VG/LL

NOTE(S)

1. PROJECT BOUNDARY IS CALCULATED BASED ON A 125 FT BUFFER AROUND TRANSMISSION LINES AND PROJECT PARCELS.

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
 2. MAP SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP, GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
 SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

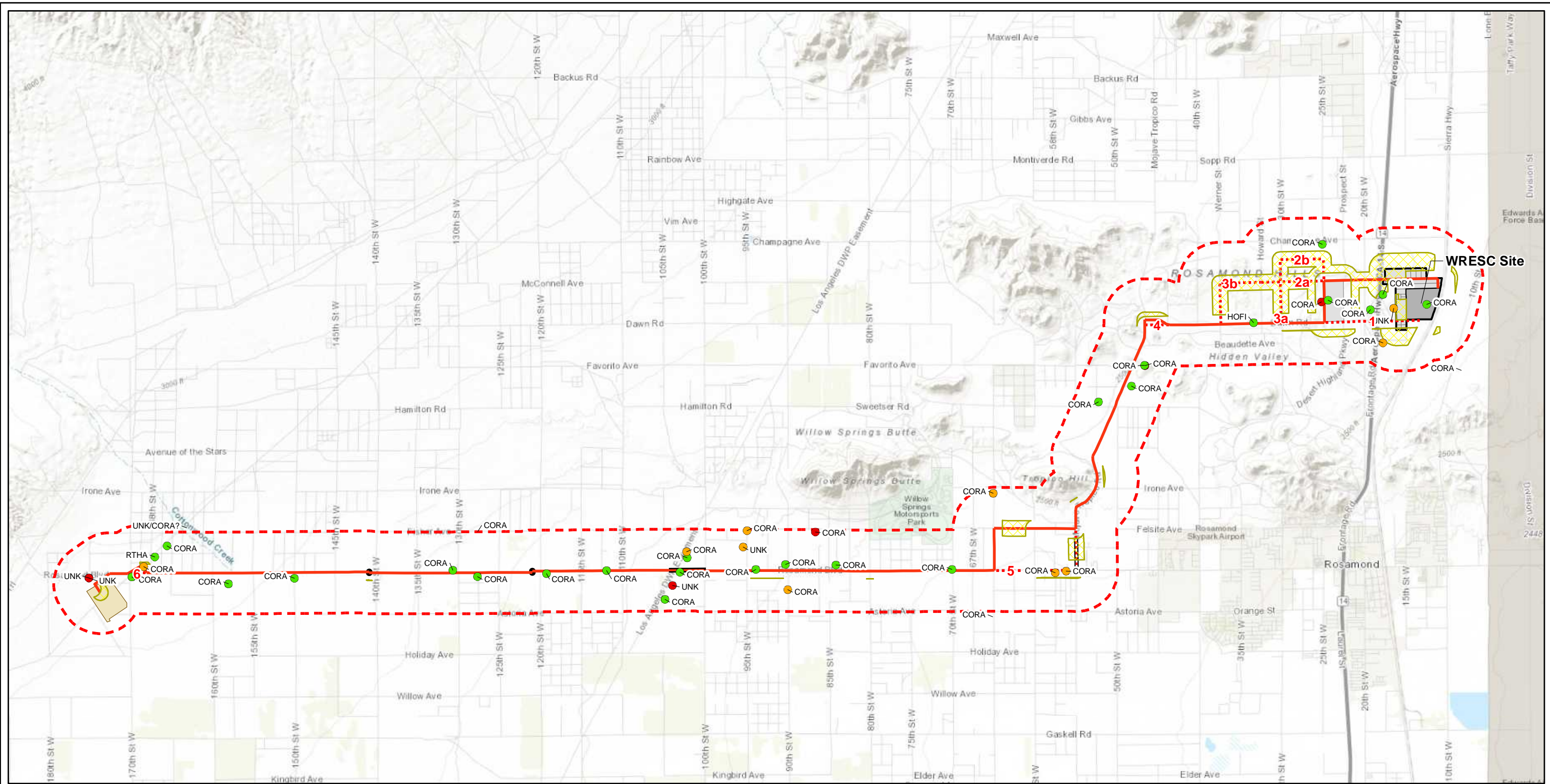
PROJECT
 WILLOW ROCK ENERGY STORAGE CENTER
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 SWAINSON'S HAWK FOCUS SURVEY

TITLE
LOCAL VICINITY MAP

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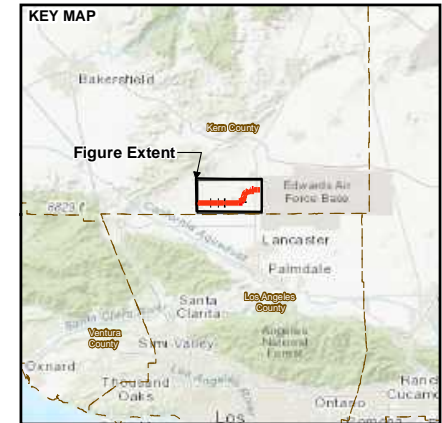
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- LEGEND**
- Nest Location and Status**
- Active
 - Potentially Active
 - Inactive
- Proposed Transmission Line**
- Preferred Route, Aboveground
 - Preferred Route, Underground
 - Route Options 1-6, Aboveground
 - Route Options 1-6,, Underground

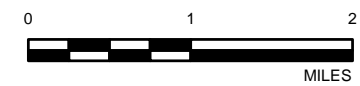
- Project Components**
- WRES Site
 - Other Project Parcels
 - Project Boundary
 - Half Mile Buffer Around Transmission Line
 - Portions of the Survey Area Not Surveyed
 - SCE Whirlwind Substation



CLIENT
GEM A-CAES LLC

CONSULTANT

YYYY-MM-DD	2024-02-29
DESIGNED	MK
PREPARED	MK
REVIEWED	SC
APPROVED	VG/LL



NOTE(S)

- ACTIVE NEST SURVEY AREA IS A 500 FT BUFFER AROUND PROJECT PARCELS AND TRANSMISSION LINES.

REFERENCE(S)

- WSP 2022, 2023 - SPECIAL STATUS WILDLIFE OBSERVATION DATA
- COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
- MAP SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

PROJECT
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BIOLOGICAL RESOURCES ASSESSMENT
SWAINSON'S HAWK FOCUS SURVEY**

TITLE
ACTIVE NEST LOCATIONS

PROJECT NO.	PHASE	REV.	FIGURE
31406639.000	01.LBR	0	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B