DOCKETED	
Docket Number:	21-AFC-02
Project Title:	Willow Rock Energy Storage Center
TN #:	262196
Document Title:	Willow Rock Incidental Take Permit
Description:	N/A
Filer:	Kathryn Stevens
Organization:	WSP USA Inc.
Submitter Role:	Applicant Consultant
Submission Date:	3/14/2025 4:45:12 PM
Docketed Date:	3/14/2025

REPORT

Incidental Take Permit

Willow Rock Energy Storage Center

Submitted to:

GEM A-CAES LLC

Submitted by:

WSP USA Inc.

401 B Street, Suite 1650, San Diego, CA 92101

+1 619 338-9376

March 2025

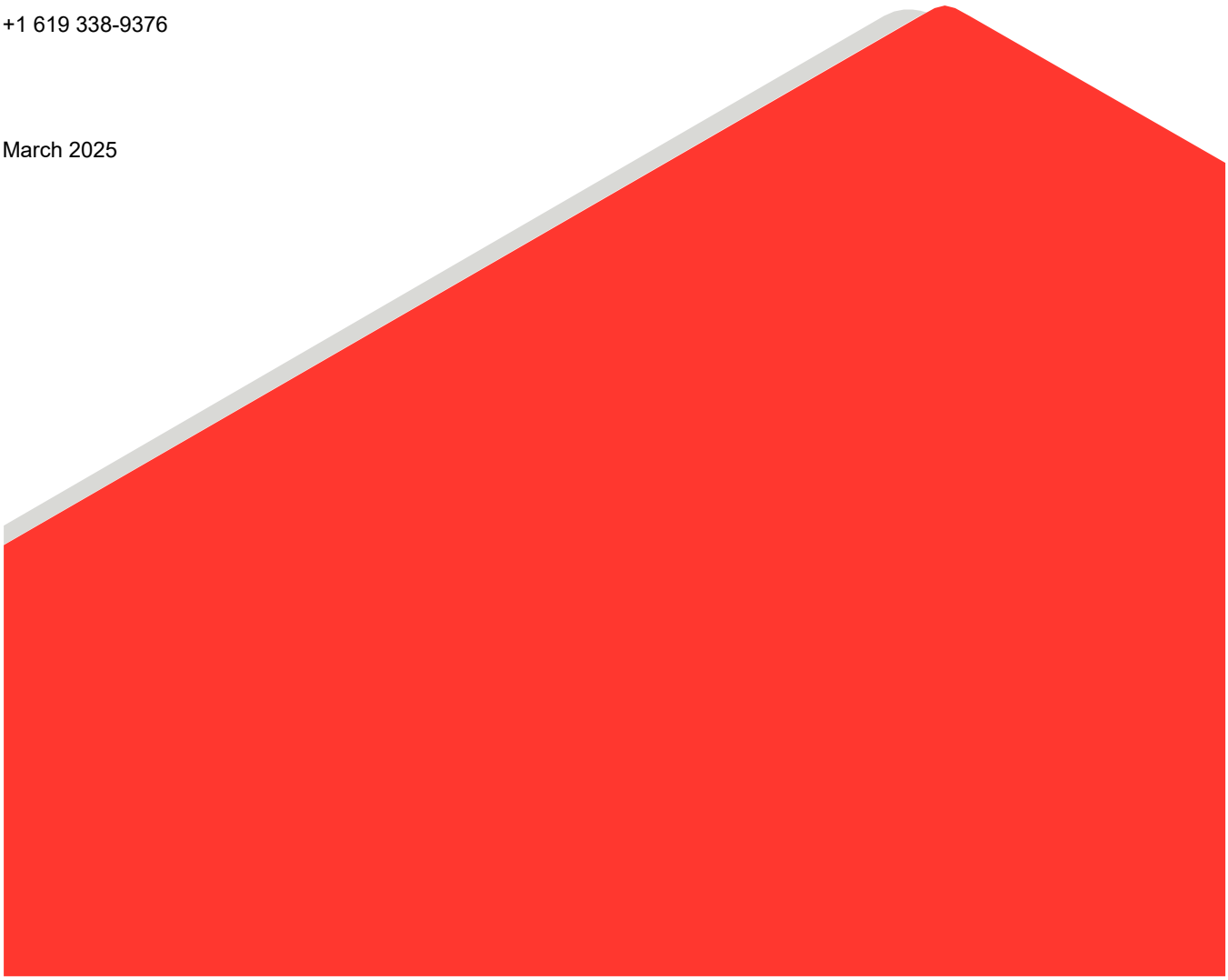


Table of Contents

TABLES

FIGURES

1.0 APPLICANT INFORMATION

Applicant's full name: GEM A-CAES LLC (subsidiary of Hydrostor Inc.) hereinafter referred to as "GEM"

Mailing address: 1125 17th St #700, Denver, Colorado 80202

Telephone number: 858-232-3541

Applicant's Contact: Laurel Lees

2.0 SPECIES COVERED IN INCIDENTAL TAKE PERMIT APPLICATION

This application for an Incidental Take Permit is intended to cover the following species:

- Crotch's bumble bee (*Bombus crotchii*) is a candidate species under the California Endangered Species Act (CEQA). It was initially identified as a candidate species in 2019 (CDFW 2021; Hatfield and Jepsen 2021).
- Burrowing owl (*Athene cunicularia*) is designated as a candidate species under the CEQA and federally protected under the Migratory Bird Treaty Act. Burrowing owl are considered by the U.S. Fish and Wildlife Service to be a bird of conservation need.

2.1 Crotch's Bumble Bee

Crotch's bumble bee, a member of the Apidae family (the typical bees' family), is a social bee that primarily occurs in California's Pacific Coast, western desert, and adjacent foothills throughout most of the state's southwestern region. It inhabits grasslands and shrublands and requires a hotter and drier environment than other bumble bee species. Overwintering occurs in soil or under leaf litter/debris. The bee nests in various cavities and forages on a number of annual flowers, including plants in the following floristic families: Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, Boraginaceae, and Hydrophyllaceae. Genera include *Antirrhinum, Asclepias, Chaenactis, Clarkia, Dendromecon, Eschscholzia, Eriogonum, Lupinus, Medicago, Phacelia,* and *Salvia* (Hatfield et al. 2018).

Workers are typically active from April to August and queens are generally active for only two months, from February through March. Once the queen selects the hive location, the active colony is detectable between April and August. The bee requires access to flowering plants for the entire activity period for habitat to be considered suitable for an active hive.

2.2 Burrowing Owl

Burrowing owl, a member of the *Strigidae* family (the typical owl family), is a small, ground-dwelling owl. It nests and roosts underground making it vulnerable to ground-disturbing activities.

Burrowing owl occurs in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Haug et al. 2011). In southern California, burrowing owl are found in undisturbed natural areas and in anthropogenically modified areas such as fallow agricultural fields, margins of active agricultural areas, livestock farms, airports, and vacant lots. Burrowing owl opportunistically select their burrows, typically using small mammal burrows, drainpipes, culverts, and other suitable natural or man-made cavities at or below ground level.

Where the Project is located, unoccupied California ground squirrel (*Otospermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), and kit fox (*Vulpes macrotis*) burrows provide natural burrow sites for the burrowing owl. Burrows and other areas occupied by burrowing owl can be

recognized by signs, including tracks, molted feathers, cast pellets, prey remains, eggshell fragments, owl whitewash, and decoration materials (e.g., paper, foil, plastic items, livestock, or other animal manure, etc.) (CDFG 2012). Suitable burrows are characterized as those with a sloping entrance larger than 3 inches.

The species may be active both day and night and may be seen perching on fence posts or standing at the entrance of their burrows. Due to the characteristic fossorial habits of burrowing owl, nesting and roosting burrows are a critical component of their habitat.

3.0 PROJECT DESCRIPTION

GEM proposes to construct and operate an advanced compressed air energy storage facility deploying Hydrostor, Inc.'s proprietary advanced compressed air energy storage technology (the Project). The Project will be a nominal 520-megawatt (MW) gross (500 MW net) and 4,160 megawatt-hour (MWh) gross (4,000 MWh net) facility. The Project includes the development of the Willow Rock Energy Storage Center (WRESC) and approximately 19 miles of gen-tie electrical transmission lines (gen-tie lines) connecting to the existing Southern California Edison Whirlwind Substation. The total area, including WRESC, adjacent storage and laydown areas (P1 North, P2 North, P2 South, and Villa Haines), gen-tie lines, and their corridor (the Project site). The parcels that will be part of Project construction:

- WRESC Site: 88.6 acres
- P1: 74.6 acres
- P2 north: 46.9
- P2 south: 10.0 acres
- Villa Haines: 79.4 acres, approximately 13.4 acres could be used for temporary construction lay down and parking
- The gen-tie line with a 125-foot buffer: 380.9 acres excluding areas within project parcels

Two scenarios for the project are proposed: with an architectural berm onsite to store excavated cavern rock and without a berm. In the "without berm" scenario disturbances at P1 and P2 north will be restored following construction; however, this restoration would not occur in the "with berm" scenario.

3.1 Project Components

Project components are described below and depicted in Figure 5.0-1 from the Supplemental Application for Certification (SAFC) (WSP 2024) and Figure 1.

3.1.1 WRESC Site

The WRESC (or Willow Rock) will be located on approximately 88.6 acres of private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway in unincorporated, southeastern Kern County, California. The final site boundary and potential construction laydown areas depend on whether the facility will include onsite re-use of excavated cavern rock in an architectural berm on the west and north sides of the facility. The office and control room will be approximately 5,000 square feet and the warehouse and maintenance area will be approximately 1,600 square feet.

3.1.2 Storage and Laydown Areas (P1, P2 North/South, Villa Haines)

Up to approximately 122.2-acre total laydown areas may be used, including cavern construction laydown area, construction phase earthwork areas, cavern rock temporary re-use areas, cavern rock temporary backup re-use areas, and parking areas located on adjacent and nearby parcels.

3.1.3 Gen-tie

An approximately 20-mile-long 230 kilovolt (kV) single-circuit double-bundle conductor generation-tie (gen-tie) line interconnecting to the SCE Whirlwind Substation with a preferred gen-tie route and route options. There will be approximately 186 transmission poles (approximately 0.2 acres of permanent disturbance).

3.1.4 Site Access

The main access to the Willow Rock site will be from Dawn Road. There will be two entry/exit points from Dawn Road for heavy load traffic. Access at the west side will lead to the laydown area, while access at the east side will lead to the east end of the Power Block. Temporary access during construction will be obtained from crushed rock driveways from both Dawn Road and Sierra Highway; the Dawn Road temporary construction access may be converted to permanent. The Sierra Highway access point will enter the WRESC Site at the construction laydown areas to the north. The permanent entrances and main plant roads within the WRESC Site will be surfaced to provide internal access to all project facilities and onsite buildings.

3.2 Project Construction

The construction of the WRESC from site preparation and grading to full-scale operation and construction closure is expected to take approximately 60 months. Major milestones are listed in Table 1.

Table 1: Major Project Milestones

Target Project Milestones	Begin		Complete	
	Month Number	Calendar Date	Month Number	Calendar Date
Site Preparation & Mobilization	1	Dec-25	3	Feb-26
Grading	2	Jan-26	13	Dec-26
Reservoir Excavation	3	Feb-26	13	Dec-26
Shaft Drilling (Ventilation and Process Connections)	10	Sep-26	35	Oct-28
Access Shaft Excavation	11	Oct-26	23	Oct-27
Topside Equipment Installation	15	Feb-27	45	Aug-29
Transmission Line Construction	24	Nov-27	39	Feb-29
Cavern Construction (and Cavern Rock Crushing and Hauling)	24	Nov-27	47	Oct-29
Topside Equipment Commissioning	40	Mar-29	52	Mar-30
Subsurface Commissioning	47	Oct-29	52	Mar-30
Full Plant Commissioning	52	Mar-30	55	Jun-30
Startup	55	Jun-30	60	Oct-30
Construction Demobilization	59	Sep-30	60	Oct-30
Commercial Operation	60	Oct-30	61	Nov-30

Source: Hydrostor 2025

During construction, there will be an average and peak workforce of approximately 273 and 749 workers, respectively, including construction craft workers and supervisory, support, and construction management personnel onsite if 100 percent of the waste rock is hauled offsite. The construction average and peak workforce would decrease slightly to 269 and 731, respectively, if all the excavated rock is re-used onsite in the form of an architectural berm.

Surface work will normally occur in 8-hour shifts, 5 days a week. Cavern work is planned as follows:

- Mobilization and site preparation (months 1 through 3): 5 days a week, 10-hour shifts
- Grading, excavation, and shaft drilling (months 2 through 26): 12 hours/day, 10 days on, 4 days off
- Cavern construction (months 26 until completion): 24 hours/day, 7 days/week, 12-hour shifts

During cavern construction, trucks will either haul excavated waste rock up to 24 hours per day from the WRESC Site or re-use the material onsite. Excavated rock during construction may be temporarily stored for re-use if necessary. During peak construction, it is estimated that 180 one-way haul trips may be required per day.

Cavern construction will occur 24 hours per day, 7 days per week. Additional hours may also be necessary for surface construction work to make up schedule deficiencies or to complete critical activities (e.g., pouring concrete at night during hot weather, and working around time-critical shutdowns and constraints).

Construction laydown and parking will be located on the property to the west and north of the WRESC Site**.** The peak construction site workforce level is expected to last from month 25 through month 46 of the construction period, with the peak being months 26 and 27. During peak construction, the Applicant estimates up to 180 haul trucks per day (one-way).

A temporary portable rock crushing facility will be located onsite for up to 10 hours per day, 7 days per week for 22 months beginning approximately in month 25. The rock crushing facility will be capable of processing up to 350 tons per hour and is expected to consist of a primary jaw crusher, a secondary cone crusher, screens, three conveyors, and two stackers. The facility will use a combination of water sprays and a baghouse to control fugitive dust and fine particulate matter emissions. The facility will be capable of operating from a locally provided power feed or using two 779-horsepower diesel-fired engine generators meeting USEPA Tier 4 emission standards. The entire facility is expected to be certified under the California Air Resources Board Portable Equipment Registration Program.

The overall quantity of rock to be crushed will depend on whether an architectural berm will be constructed onsite or whether excavated rock will be hauled offsite. If an architectural berm is constructed, only 25 percent of the excavated rock is expected to be crushed to facilitate berm stability. If the excavated rock is hauled offsite, then up to 100 percent of the excavated rock is expected to be crushed to meet off-taker specifications.

A temporary portable concrete batch plant is also expected to be located onsite to support construction of the shafts and, if necessary, initial cavern construction. The concrete batch plant is expected to operate onsite for approximately 12 to 15 months. Construction is expected to require up to 80 cubic yards per day of finished cement. The facility will be capable of operating from a locally provided power feed or using one 500-horsepower diesel-fired engine generator meeting USEPA Tier 4 emission standards. The entire facility is expected to be certified under the California Air Resources Board Portable Equipment Registration Program.

3.3 Project Operation and Maintenance

Operations and maintenance (O&M) activities for WRESC are described in Section 2.1 of the SAFC. The WRESC will be operated and monitored continuously 24 hours per day, 7 days per week by qualified and licensed onsite operations staff and will not be remotely operated (other than potential grid regulation-required operations such as generator transfer trips or special protection schemes).

There will be approximately 40 full-time staff to operate the facility. The operations staff will include control room operators (24 hours per day, 7 days per week) and roving operators in the field conducting general rounds at least twice per 12-hour shift.

Additional field checks will be done as needed for maintenance activity, upsets, or other general operations requirements.

3.4 Project Closure and Decommissioning

Closure of the facility can be temporary or permanent. Temporary closure is defined as a shutdown for a period exceeding the time required for normal maintenance, with an intent to restart in the future. Permanent closure is defined as a cessation in operations with no intent to restart operations. Closures are discussed below.

3.4.1 Temporary Closure

For a temporary closure where there is no release of hazardous materials, GEM will maintain the security of the WRESC facilities. If the temporary closure includes damage to the Willow Rock facilities, and if there is a release or threatened release of regulated substances or other hazardous materials into the environment, procedures will be followed as set forth in an Emergency Management Plan in accordance with a Hazardous Materials Plan. Procedures will include methods to control releases, notification of applicable authorities and the public, emergency response, and training for facility personnel in responding to and controlling releases of hazardous materials. Once the immediate problem is solved and the regulated substance/hazardous material release is contained and cleaned up, temporary closure will proceed as described above for a closure where there is no release of hazardous materials.

3.4.2 Permanent Closure

When the facility is permanently closed, the closure procedure will follow a decommissioning plan that will be developed. The conditions that would affect the decommissioning decision will be presented to the California Energy Commission (CEC) when more information is available and the timing for decommissioning is more imminent. The plan will discuss:

- Proposed decommissioning activities for Willow Rock and all appurtenant facilities constructed as part of Willow Rock
- Conformance of the proposed decommissioning activities to all then-applicable laws, ordinances, regulations, and standards (LORS) and local/regional plans
- Associated costs of the proposed decommissioning and the source of funds to pay for the decommissioning

In general, the decommissioning plan for Willow Rock will attempt to maximize the recycling or reuse of all facility components. It is anticipated that the potential cavern rock architectural berm will remain in place to minimize potential environmental impacts associated with its removal. It will be decommissioned such that no ongoing

maintenance is needed for flood control. All nonhazardous wastes will be collected and disposed of in appropriate landfills or waste collection facilities. All hazardous wastes will be disposed of according to all applicable LORS.

4.0 PROJECT LOCATION AND DESCRIPTION

4.1 Project Location

The Project site is located on private property in the rural community of Ansel within the 7.5-minute Soledad Mountain and Rosamond, California, U.S. Geological Survey topographic quadrangle (topo quad). P2 North and P2 South are located east of SR 14 and the additional gen-tie alignments are located west of SR 14. The Project site is located in portions of Sections 31, 32, and 33 of Township 10 North and Range 12 West; portions of Section 4 of Township 9 North and Range 12 West; and portions of Sections 14, 15, of Township 9 North and Range 13 West.

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) to 2,720 feet (830 meters) along Dawn Road.

4.2 Project Site Description

The Project site consists of largely undeveloped, natural open space. Dominant vegetation communities include creosote bush-white bursage scrub. Dominant soils within the project area consist of sandy loam. Existing disturbances within the project area include existing access roads and communication equipment.

Vegetation communities were mapped in the Project site including a 500-foot buffer from the transmission line and transmission line variances and a 1,000-foot buffer from the Project site. Table 2 provides a summary of vegetation communities that occur in the Project site.

Table 2: Acreage of Land Use and Vegetation Communities

Vegetation Community / Land Use	Acreage
Project Boundary[1]	
WRESC Site	
Cheesebush Scrub (CHBS)	13.18
Creosote bush - white bursage scrub (CBWS)	63.74
Disturbed/Developed (DH-DEV)	6.48
White Bursage Scrub (WBS)	5.20
P1	
Allscale scrub (ASSC)	0.17
Cheesebush Scrub (CHBS)	1.08
Creosote bush - white bursage scrub (CBWS)	61.96
Disturbed/Developed (DH-DEV)	2.33
White Bursage Scrub (WBS)	9.10

[1] The acreages below include project boundary acreages and all project components (pole construction sites, pole foundations, access roads, pull and tensioning sites, and undergrounding trenches) that lie within the project parcels.

Vegetation Community / Land Use	Acreage
Project Boundary[1]	
P2 North	
Creosote bush - white bursage scrub (CBWS)	41.21
Creosote bush scrub (CBS)	4.25
Disturbed/Developed (DH-DEV)	1.44
P2 South	
Creosote bush - white bursage scrub (CBWS)	7.60
Disturbed/Developed (DH-DEV)	1.53
White Bursage Scrub (WBS)	0.85
Villa Haines Subsection	
Creosote bush - white bursage scrub (CBWS)	10.71
Creosote bush scrub (CBS)	0.26
Disturbed/Developed (DH-DEV)	2.39
Project Components Outside Project Boundary Along Gen-Tie Transmission Line[2]	
Pole Construction Site	
Allscale scrub	3.04
Cheesebush Scrub	0.55
Creosote bush - white bursage scrub	4.68
Creosote bush scrub	0.91
Disturbed/Developed	11.95
Non-Native Grassland and Forbes	1.00
Rubber rabbitbrush scrub	0.64
Tamarisk Thickets	0.11
White Bursage Scrub	0.01
Pole Foundation	
Allscale scrub	0.03
Cheesebush Scrub	0.00
Creosote bush - white bursage scrub	0.05
Creosote bush scrub	0.01
Disturbed/Developed	0.10
Non-Native Grassland and Forbes	0.01
Rubber rabbitbrush scrub	0.01
Tamarisk Thickets	0.00
Proposed Access Roads	
Creosote bush - white bursage scrub	2.04
Disturbed/Developed	0.05

[2] The acreages below reflect only project component acreages outside of project boundary.

Vegetation Community / Land Use	Acreage
Project Boundary[1]	
Pull and Tensioning Site	
Allscale scrub	2.39
Cheesebush Scrub	1.50
Creosote bush - white bursage scrub	7.21
Creosote bush scrub	1.19
Disturbed/Developed	8.71
Rubber rabbitbrush scrub	0.40
Undergrounding Trench	
Allscale scrub	0.18
Disturbed/Developed	0.48
Non-Native Grassland and Forbes	0.04
Rubber rabbitbrush scrub	0.02
Total	**280.79**

Surveys for jurisdictional waters were conducted on October 3-4, 2023, June 21, 2024, November 12, 2024, November 27, 2024, December 2-6, 2024 and January 22, 2025. Twenty-five jurisdictional wetlands and 49 non-jurisdictional ephemeral drainages were identified within the study area. The Supplement Willow Rock Jurisdictional Waters Report (TN# 261511) was docketed on January 31, 2025 via *Kiteworks* and then at the request of the CEC uploaded to the docket in five parts (TN# 261995, TN# 261994, TN# 261993, TN# 261992, and TN# 261991) on February 26, 2025 due to the report's file size.

5.0 POTENTIAL IMPACTS

5.1 Crotch's Bumble Bee

Surveys for Crotch's bumble bee were conducted in 2024 based on the Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species (CDFW 2023). The surveys were conducted to document suitable Crotch's bumblebee habitat and bee presence. During these surveys components of Crotch's bumble bee habitat, such as nectar sources, and encounters with bees were mapped.

The primary nectar source for Crotch's bumblebee documented in the Project site are patches of tansy-leafed phacelia (*Phacelia tanacetifolia*). Less than 10 *Eschscholzia sp., Chaenactis sp.*, and *Eriogonum sp.* individuals were identified, and as such were not considered to occur in sufficient numbers to be a substantial nectar source (greater than 1 acre in size) and were generally within 5 meters of the recorded Phacelia patches. Suitable foraging habitat is predominantly located in P2 North and South and along the gen-tie line, with sparse occurrence in the southwestern corner and central part of the WRESC site (Figure 2).

Ground conditions for potential hives consist of undisturbed decomposed granite soils with scattered bare ground patches and small mammal burrows. There is no evidence of leaf litter or woody forest edge that could provide overwintering habitat.

This species of bee generally requires more nectar from March to July. Most of the plant species recorded in the project area that are considered appropriate sources of Crotch's bumble bee nectar completed their flowering stage by the end of May. Phacelia was starting to die off during surveys conducted in May and was finished

flowering by early June, as observed during plant protocol surveys. All recorded nectar sources in the project area completed their flowering stage by the end of May. Typically, Crotch's bumble bee require nectar sources throughout their flight season to establish a hive, which extends to the end of July, suggesting that while the Project site contains suitable foraging habitat, it is unlikely to provide sufficient nectar sources to support a hive.

Thirty-five (35) Crotch's bumble bee worker bees were recorded during the protocol survey and incidentally during other Project surveys. Bees were observed in Phacelia patches as well as on creosote bush and *Eriastrum*. Queen Crotch's bumble bees were observed 7 times; however, they were only observed in Phacelia patches and only displayed foraging behavior. Observations of bees were recorded in P2 North and other locations outside of the Project site (Figure 2). No bees were recorded on the WRESC site. No hives were observed. The closest known active Crotch's bumble beehive was recorded on Edward's Airforce Base over 7 miles to the east (CDFW 2024a). Foraging bumble bees can travel approximately 1 mile from their nest, as such bees from Edward's Airforce Base are unlikely to use the Project site (Osborne et al. 2007).

Without mitigation, potential impacts to Crotch's bumble bee from Project activities could include habitat loss and mortality during vegetation clearing. Based on habitat and species occurrences documented during surveys, habitat loss is expected to be limited to permanent loss of nectar sources in the WRESC site and temporary loss of nectar sources in P1, P2 North, and P2 South. Hydrostor proposes two potential iterations of the Project layout depending on how rock material is disposed of. Construction of the berm scenario of the Project is estimated that 9.0 and 25.9 acres of foraging habitat may be permanently and temporarily lost, respectively. The without-berm scenario is estimated to result in 1.4 and 8.3 acres of permanent and temporary foraging habitat loss, respectively. Loss of Crotch's bumblebee hives is not expected construction based on data collected for the Project to-date; however, hive loss could occur if a hive becomes established prior to Project construction.

Clearing foraging habitat could result in incidental mortality of Crotch's bumble bee if clearing occurs during the bee flight season, which extends from May to the end of July. With the application of mitigation measures identified in Section 7.0 Mitigation, the occurrence of potential incidental mortality is expected to be low.

5.2 Burrowing Owl

The Project area predominantly consists of Mojave Creosote Brush Scrub with scattered Joshua trees. Suitable habitat for burrowing owls occurs across the Project area; although habitat in the northern portion of the Project site is considered more suitable as it supports more open vegetation cover with fewer Joshua trees. The California Natural Diversity Database records show occurrences of burrowing owl 3.5 miles southwest of a segment of the project near the Rosamond Dry Lake and 500 feet south of the Transmission Line Alignment along Rosamond Boulevard at 100th Street West. Burrowing owls were not identified within the Project site; however, three owls were incidentally observed during other surveys:

- One burrowing owl was observed approximately 1 mile southeast of the intersection of Dawn Road and Sierra Highway.
- One burrowing owl was observed along Hamilton Road near 110th Street, approximately 2 miles north of the gen-tie line Rosmond Boulevard route.
- One burrowing owl was observed near the intersection of 758th Street West and Hamilton Road.

Thirty-six (36) unoccupied burrows that were considered suitable for burrowing owls were identified within the survey area (Figure 3). Construction of the no-berm scenario is expected to result in potential impacts to seven

potential burrows, three in the WRESC site and four in P1. Construction of the with berm scenario is expected to result in potential impacts to nine potential burrows, three in the WRESC site, four in P1, one in P2 south, and one at Villa Haines. The other unoccupied burrows suitable for burrowing owls were located primarily south of the WRESC site and along the transmission line preferred route and options. These burrows are not expected to be impacted by construction. No burrowing owl sign or indication of burrow use was recorded in any of the 36 potential burrows.

Incidental take of burrowing owl in the form of mortality ("kill") may occur during construction and O&M of the Project. Potential sources of mortality include:

- Accidental destruction of active burrows during clearing and grubbing. Vegetation clearing and ground disturbance activities during construction could damage undocumented burrowing owl nests resulting in nest abandonment, crushing eggs and young, or entombment of individuals.
- Vehicle strikes from increased Project traffic during construction and O&M. Vehicles used to construction the Project and during Project operations will increase traffic levels at the WRESC site and temporarily in P1, P2 North, and P2 South. Increased traffic volume increases the risk of burrowing owl strikes.
- Change to nesting success from nest abandonment during Project construction. Project-generated noise, dust, and increased human presence could result in burrowing owl nest abandonment during Project construction, particularly during the early phases of construction. Abandonment of active nests could result in mortality of eggs or juveniles that are dependent on parental care.
- Loss of individuals if relocation of active nests is required. Relocation of active nests can result in mortality of eggs and nest abandonment.

6.0 JEOPARDY ANALYSIS

6.1 Crotch's Bumble Bee

Crotch's bumble bee is absent from much of its historic range in the Central Valley, with abundance decline of approximately 98 percent over the last decade. There are several factors that are attributed to the decline of the species. Habitat loss and degradation, including agricultural intensification in the northern Central Valley and rapid urbanization in the southern Central Valley, are primary contributors. Another major threat factor affecting this species is climate change. The species is adapted to a narrow range of climatic conditions compared to other bumble bees. In addition, native bumble bees in general are threatened by other factors including pesticides, non-native competition, and a reduction in genetic diversity.

"Take" in the form of mortality Crotch's bumble bee due to project activities could occur during Project clearing and ground disturbance. Hives have not been documented in the Project area, and as such, it is not expected that hives will be impacted by project activities. However, if a hive is established before construction activities commence, "take" may include the incidental destruction of hives due to vegetation clearing and ground disturbance. Vegetation clearing could also result in "take" of individual bees; however, mortality of hives or individuals is expected to be rare given the management measures proposed in Section 7.0 below. As such, project-related mortality of Crotch's bumblebee, if any, is not expected to change the long-term viability of the species.

Vegetation clearing would contribute to habitat loss and degradation contributing to the causes of Crotch's bumble bee decline. Permanent habitat loss is limited to the WRESC site, which supports sparsely distributed nectar

sources. Temporarily impacted patches of nectar sources located in P1, and P2 North and South can predominantly be re-established post-construction in the “without berm” scenario and, therefore would only contribute to factors that affect Crotch’s bumble bee populations during the construction phase.

6.2 Burrowing Owl

Burrowing owl breeding populations have declined in their central and southern coastal breeding areas although the largest concentration of burrowing owl occur in Imperial Valley (Poulin et al. 2020). Statewide, the species has experienced breeding range retraction contributing to an estimated 11 percent population decline, excluding desert areas (Wilkerson and Siegel 2010). Threats affecting burrowing owl populations include habitat loss, degradation, and modification; eradication of ground squirrels resulting in a loss of suitable burrows; direct mortality from collisions, pesticide use, and agriculture; population isolation; predation; and nest box failure (CDFW 2024b). Regional and long-term conservation for burrowing owls includes protecting remaining breeding pairs, providing for population expansion, protecting and enhancing breeding and essential habitat, and amending or augmenting land adjacent to occupied habitat.

Risk of potential burrowing owl mortality will continue through the duration of construction and O&M. However, while risk of mortality persists through these phases the likelihood of mortality is expected to be limited with the application of mitigation measures outlined in Section 7.0 below. The unexpected incidental “take” of burrowing owls due to the Project is not expected to change the long-term viability of local or regional populations.

7.0 MITIGATION MEASURES

The following sections describe general as well as species-specific measures that will be implemented to avoid or reduce the potential for incidental take of Crotch’s bumble bee and burrowing owl.

7.1 General Provisions

- The Applicant will designate a “Designated biologist” and “Designated monitor” who are appropriately qualified to design, oversee, and implement preconstruction surveys, monitoring, and translocations, if required. The Designated biologist will have experience conducting surveys for burrowing owl and Crotch’s bumble bee and be knowledgeable of the species’ biology, natural history, and surveying, monitoring, and exclusion techniques. The Designated biologist(s) must also have experience monitoring construction activities under an Incidental Take Permit for the species.
- Clearing and construction boundaries will be clearly demarcated in the field and on project mapping prior to construction activities. Flagging, fencing, or other materials used to demarcate boundaries will be retained through the construction phase.
- Sensitive habitats to be avoided or where specific management measures are required will be clearly demarcated in the field and on mapping. Signage will be used to identify sensitive habitats.
- Project access routes will be established, identified in the field and on mapping, and communicated to workers.
- Vehicle speeds will be limited to 15 miles per hour on access roads during construction and O&M. Signs posting this speed limit will be placed at intervals along the access road.
- Workers will be prohibited from bringing firearms and pets (e.g., dogs) to the Project area.

- All holes and other voids in the earth that could entrap wildlife will be backfilled as soon as practicable or covered if left overnight.
- Sources of water will be managed during operations and maintenance to reduce attracting wildlife to the Project site.
- Use of rodenticides and insecticides will be discussed with the California Energy Commission (CEC) Compliance Project Manager (CPM) and California Department of Fish and Wildlife (CDFW) prior to implementation
- A Worker Environmental Awareness Program (WEAP) will be developed prior to Project construction and all construction and O&M personnel shall participate in WEAP training prior to working on-site. The Applicant will keep records of personnel training. The WEAP will be prepared and provided by the Designated biologist(s) and include:
  - Description of the natural history of covered species, including information on physical characteristics, photographs, distribution, behavior, ecology, and sensitivity to human activities
  - Describe the sensitivity and locations of vegetation communities, biological resources, and habitat within and adjacent to work areas, and proper identification of these resources
  - Describe interactions between construction and operation activities and covered species, the required management measures for the Project, legal protections and penalties, and reporting requirements and methods
  - Describe tools in place to avoid and minimize potential impacts to covered species, the purpose for these measures, and possible penalties for not adhering to measures
  - Methods to contact the Designated biologist and Designated monitor in the event of wildlife encounters, as well as notification of any dead or injured wildlife species encountered during Project-related activities
  - Description of the authority the Designated biologist has to halt work in areas where an unauthorized adverse potential impact to the covered species may occur if the activities continued
  - Discussion of general safety protocols, such as hazardous substance spill prevention and containment measures and fire prevention and protection measures
  - Methods and requirements for workers to report observations of covered species and their sign to a Designated biologist for inclusion in the yearly compliance report
  - Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines

7.2 Crotch's Bumble Bee

In addition to the general measures described above, the following measures are specific to managing potential impacts to Crotch's bumble bee:

- Initial vegetation removal and/or soil disturbance activities will be avoided during the Crotch's bumble bee flight season (March to July), if feasible. If construction activities must occur during the flight season, a biological monitor will conduct sweeps of the habitat and clear the site before vegetation is removed. Large

patches of Phacelia located in the additional workspace areas will be avoided until after July, as feasible. A Designated monitor will be present during the removal of the individual Phacelia plants identified in the Project site.

- Protocol level surveys for Crotch's bumble bee will be conducted prior to construction by a Designated biologist during the flight season (March to July) if clearing is scheduled to occur during this season. A minimum of three survey rounds will be conducted on the Project site prior to construction to document Crotch's bumblebee presence and newly established hives, if any.
- Clearing of foraging plants may be delayed until after the flight season if a Crotch's bumblebee nest is detected during protocol level surveys
- A 100-foot no-disturbance buffer zone will be established around nests if nests are identified during surveys or incidentally to reduce the risk of incidental take. The Applicant will coordinate with CEC CPM and the CDFW if a Crotch's bumble bee nest is identified to determine appropriate avoidance and minimization measures.
- If the 100-foot no-disturbance buffer zone around active nests cannot be maintained during construction, the Designated biologist will develop a nest-specific management plan that identifies the work activities that may occur in the buffer, additional mitigation and monitoring that will be implemented, and methods to be implemented to relocate hives. This plan will be provided to CDFW for review and to the CEC for approval prior to implementation.
- Phacelia and other nectar sources will be established in restored areas in P1, P2 North, and P2 South.

The re-establishment of Phacelia patches will occur at an appropriate per-acre ratio and occur in areas identified for Western Joshua Tree relocation. Phacelia would be spread without scarification. To support germination, Phacelia seeds would be watered upon spreading and as recommended until the habitat has re-established. In addition to Phacelia itself, the re-establishment of habitat would benefit from seeding a pallet of perennials that can flower later into the summer than Phacelia. Plants that may be included in the mix and support Crotch's bumble bee are *Asclepias* sp. (milkweeds), *Chaenactis* sp., *Lupinus* sp., *Salvia* sp., *Medicago* sp.

7.3 Burrowing Owl

- A pre-construction take avoidance survey for burrowing owl will be conducted 14 days prior to the initiating clearing, ground disturbance, or construction activities. The survey will be based on methods described in the Staff Report on Burrowing Owl Mitigation (CDFG 2012). In addition, a final pre-construction take avoidance survey will be conducted within 24 hours prior to initial construction activities. Surveys will include the WRESC site, P1, P2 North and South, and pole and tensioning areas along the gen-tie line as well as a 500-foot (150-meter) buffer, where accessible. Timing of surveys at project components (e.g. WRESC site, P1, P2 North and South, gen-tie) may be staggered based on the construction schedule.
- Potential, Known, and Active (defined below) burrowing owl burrows identified during pre-construction surveys will be documented on project mapping.
- If no burrowing owl sign or owls are observed during the pre-construction clearance surveys, no additional biological monitoring is needed unless a burrowing owl is incidentally observed in the Project site during construction.

- Where feasible, clearing and ground disturbance activities will avoid the burrowing owl nesting period (February 1 to August 31).
- Burrow Avoidance: A no-disturbance buffer zone will be established around potential, known, and active burrowing owl burrows:
  - Potential burrow: A burrow that is assessed as suitable for burrowing owl (e.g. hole three inches or larger) but not currently or historically known to be occupied by a burrowing owl is considered a Potential burrow. A 50-foot no-disturbance buffer will be established around Potential burrows except where removal of burrows is required for project construction.
  - A Known burrowing owl burrow is a burrow where burrowing owl occupancy has previously been recorded or shows evidence of previous occupation by a burrowing owl. Known burrows can include anthropogenic features (e.g. pipes) that show signs of occupancy (e.g. burrowing owl presence, whitewash, pellets, prey remains, etc.). A 100-foot no-disturbance buffer will be established around Known burrows.
  - Active burrows are those where burrowing owl use has been established during the current nesting season. A 1,600-foot no-disturbance buffer will be established around the active burrowing owl burrows while occupied by owls during the nesting season.
  - If Active burrow(s) are identified during pre-construction surveys, the Designated biologist will develop a monitoring plan, which will be implemented by the Designated monitor(s). Monitoring results will be used to determine whether no-disturbance buffers are sufficiently protective of Active burrowing owl burrows. The Designated biologist may increase the no-disturbance buffers described, if necessary, based on behavioral observations. The buffers described above will not be reduced without prior written approval from the CEC CPM in consultation with CDFW. Nighttime work will be avoided near active burrows. Lights will not be shone into buffers surrounding active burrows.
  - Burrowing owl blockage measures (described below) will be implemented if buffers cannot be maintained around burrowing owl burrows.
  - If occupied burrows are found within the 500-foot buffer area and will not be impacted by project activities, a biological monitor may be required to monitor construction activities that occur within buffer zone described above.
- The WEAP will include burrowing owl identification, biological monitor contact information, and next steps if any burrowing owl are identified during construction.
- If burrowing owl are present during construction, adaptive mitigation measures to avoid or reduce potential impacts to burrowing owl may include scheduling construction during non-breeding periods, monitoring occupied burrow sites during construction, passive relocation of non-breeding burrowing owl, and instituting construction-free buffer zones and/or “shelter in place” techniques around occupied burrows.
- If buffers described above cannot be maintained during construction, suitable burrow sites will be blocked rather than destroyed. Blocking suitable burrows will be done following a **Burrowing Owl Blockage Plan** to be developed by the “Designated biologist” and submitted to CDFW for review and to the CEC for approval prior to implementation. The Blockage Plan will describe measures to be implemented to monitor for owl

presence prior to blocking, measures to block burrows, duration of blockages, monitoring during blockage period, and block removal techniques.

- A **Burrowing Owl Excavation Plan** will be prepared by the Designated biologist if potential, known, or active burrows are identified in the Project site and cannot be avoided by Project activities. The purpose of this plan would be to describe how potential or known burrows would be excavated to prevent burrowing owl use prior to vegetation clearing and ground disturbance. The Burrowing Owl Exclusion Plan would be reviewed by CDFW and approved by the CEC CPM prior to implementation. The Plan would describe methods to exclude burrowing owls, monitor owl activity, and construct artificial burrows. Active burrows may only be excavated once nesting has been confirmed as complete and fledglings are capable of surviving away from the burrow.
- A **Burrowing Owl Mortality Reduction Plan** will be required in the event burrowing owl burrow exclusion, burrow excavation, artificial burrow construction, and other relocation activities are required. The Burrowing Owl Mortality Reduction Plan will be prepared by the Designated biologist and submitted to CDFW for review and the CEC CPM for approval. The Burrowing Owl Mortality Reduction Plan will describe survey methods, buffer zones and work that could occur in buffer zones, burrow exclusion methods, excavation methods, and the steps to be taken in the event of an injured or killed owl, eggs, or chick. Changes to the Burrowing Owl Mortality Reduction Plan will be submitted to the CDFW for review and the CEC CPM for approval prior to implementation.
- Active and known burrowing owl burrows that cannot be avoided will be replaced with an artificial burrow. A Burrow Replacement Plan will be developed and submitted to CDFW for review and the CEC CPM for approval prior to destruction of the burrow describing the burrow to be destroyed, including location, location of potential replacement locations, description of artificial burrow design, installation methods, and long-term maintenance.
- The CEC CPM and the CDFW will be notified if injured or killed burrowing owls are encountered during construction or operation and maintenance. Injured burrowing owls will be transported to an approved wildlife rehabilitation center or veterinary facility.
- The designated biologist will conduct pre-disturbance surveys if additional clearing or ground disturbance is required during operation and maintenance.
- A 50-foot buffer will be maintained around potential burrowing owl burrows during operation and maintenance. New active burrowing owl burrows will be reported to the CEC CPM and the CDFW and an additional management plan may be required that describes additional measures to mitigate disturbance to burrowing owls.

8.0 MONITORING PLAN

14 CCR § 783.2(a)(9): A proposed plan to monitor compliance with the minimization and mitigation measures and the effectiveness of the measures.

There are several plans proposed as part of the Project SAFC (WSP 2024) to avoid and reduce Project-related potential impacts to the environment. These Plans are further detailed in the SAFC and include:

1) A **Sensitive Species Management Plan** will be prepared to identify all necessary and recommended avoidance and minimization measures as well as Best Management Practices (BMPs), to avoid incidental take of any sensitive plant or wildlife species either present or with a moderate to high potential to occur. A

Project-specific Sensitive Species Management Plan will be prepared by a qualified biologist and will be submitted to CDFW for review and the CEC CPM for approval.

2) An invasive species treatment plan will be prepared and incorporated into the sensitive species management plan.

3) A raven management plan will be prepared to prevent unwanted indirect potential impacts from the Project on sensitive species by reducing attractants to the common raven.

4) A hazardous fluid spill prevention plan will be implemented during construction.

A qualified biologist or the designated monitor will be present on-site during all clearing, grubbing, vegetation removal, leveling, grading, and/or other ground-disturbing activities to monitor work and ensure that conservation measures are appropriately implemented. In addition, a qualified biologist will monitor specific construction activities that occur on or near sensitive communities and special-status species locations, including vegetation removal and ground-disturbing activities.

The Designated biologist will prepare annual progress reports that will be provided to CDFW for review and the CEC CPM for approval as well as a final monitoring report, which will be completed no later than 90 days after completion of construction activities. The annual progress reports will provide a summary of pre-construction surveys, monitoring efforts, observations of Crotch's bumble bee and burrowing owls, and mitigation measures implemented during the reporting period. The final monitoring report will provide a summary of the results provided in the annual reports for the full construction period. In addition, the final report will describe the effectiveness and practicality of the avoidance and minimization measures implemented, the amount of foraging habitat for Crotch's bumble bee potentially impacted, the number of Crotch's bumble bee hives documented and if any were removed, the number of burrowing owl burrows excavated and/or blocked (if any), the number of burrowing owl burrows moved, the number of Crotch's bumble bee and burrowing owls killed or injured, and the specific information for each burrowing owl and Crotch's bumble bee as described previously. The final report may include recommendations for modifying measures to manage effects to Crotch's bumble bee and burrowing owl during O&M activities. The report will also provide a summary of communications with the CEC CPM and the CDFW and any approvals by the CEC CPM provided during the construction phase.

9.0 FUNDING SOURCES

GEM has proposed to fund and protect lands as part of the Willow Rock Energy Storage Center Draft Preliminary Conceptual Western Joshua tree (*Yucca brevifolia*) Relocation Plan (WRA 2024). As part of this Plan, GEM proposes to translocate western Joshua trees from disturbed portions of the Project site to P1, or similar lands, post-construction. GEM will restore suitable foraging habitat for Crotch's bumble bee in the area identified in the Western Joshua tree relocation plan, providing mitigation for both species on those lands. GEM proposes to restore permanently and temporarily lost Crotch's bumble bee foraging habitat (approximately 35 acres) at an appropriate ratio for up to approximately 52 acres of habitat, depending on whether the berm or without berm scenario is selected.

10.0 REFERENCES

California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency. March 7, 2012.

California Department of Fish and Wildlife (CDFW). 2021. Legal Status of Bumble Bees In California. Accessed online at: https://wildlife.ca.gov/Data/CNDDB/News/legal-status-of-bumble-bees-in-california#gsc.tab=0.

CDFW. 2023. Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline.

CDFW. 2024a. California Natural Diversity Database (CNDDB) RareFind 5 records of sensitive elements. Accessed online at: https://wildlife.ca.gov/Data/CNDDB.

CDFW. 2024b. California Endangered Species Act: Petition Evaluation for Western Burrowing Owl (Athene cunicularia hypugaea). Accessed online at: CESA Petition Evaluation.

International Union for the Conservation of Nature (IUCN). 2024. Red List. Accessed online at: https://www.iucnredlist.org/.

Hatfield, R., S. Jepsen, S. Foltz Jordan, M. Blackburn, and A. Code. 2018. A Petition to the State of California Fish and Game Commission to List the Crotch bumble bee (Bombus crotchii), Franklin's bumble bee (Bombus franklini), Suckley cuckoo bumble bee (Bombus suckleyi), and western bumble bee (Bombus occidentalis occidentalis) as Endangered under the California Endangered Species Act. The Xerces Society for Invertebrate Conservation, Portland, OR, USA.

Hatfield, R., and S. Jepsen. 2021. A Conservation Conundrum: Protecting Bumble Bees Under The California Endangered Species Act. California Fish and Wildlife Special CESA Issue: 98-106 2021.

Haug, E. A., B. A. Millsap, and M. S. Martell. 2011. Burrowing owl (Athene cunicularia), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/061.

Osborne, J. L, A. P Martin, N. L Carreck, J. L. Swain, M. E Knight, D. Goulson, R. J Hale, R. A Sanderson. 2007. Bumblebee flight distance in relation to the forage landscape. Journal of Animal Ecology: 77(2) 406-415.

Poulin, R. G., L. D. Todd, E. A. Haug, B. A. Millsap, and M. S. Martell (2020). Burrowing Owl (*Athene cunicularia*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. Accessed online at: https://doi.org/10.2173/bow.burowl.01.

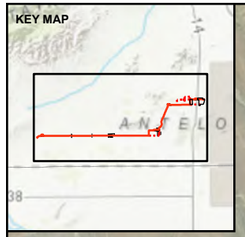
Wilkerson, R. L., and R. B. Siegel. 2010. Assessing changes in the distribution and abundance of burrowing owls in California, 1993-2007. Bird Populations 10:1–36.

WRA, Inc. 2024. Willow Rock Energy Storage Center, Draft Preliminary Conceptual Western Joshua Tree Relocation Plan, Kern County, California.

WSP USA Inc. 2024. Supplemental Application for Certification, Willow Rock Energy Storage Center. March 2024.

Figures

KEY MAP



N

LEGEND

Proposed Transmission Line

- Preferred Route, Aboveground
- Preferred Route, Underground
- Route Options 1-6, Aboveground
- Route Options 1-6, Underground
- Project ROW

Project Components

- WRESC Site
- Other Project Parcels
- Project Boundary
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW

0 2

1:68,000 MILES

NOTE(S)

1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.

REFERENCE(S)

1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
3. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA, EPA, NPS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2025-03-11
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMIT

TITLE
GEN-TIE TRANSMISSION LINE ALIGNMENT OVERVIEW

PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	1

PATH: G:\Hydrostor\Arsen\11_GIS\TEMP\2025_03_05_KO_ITP\Hydrostor_ITP_Working_KO.aprx PRINTED: 3/11/2025 at 11:18 AM BY: USKO127009

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

1 in

KEY MAP

N

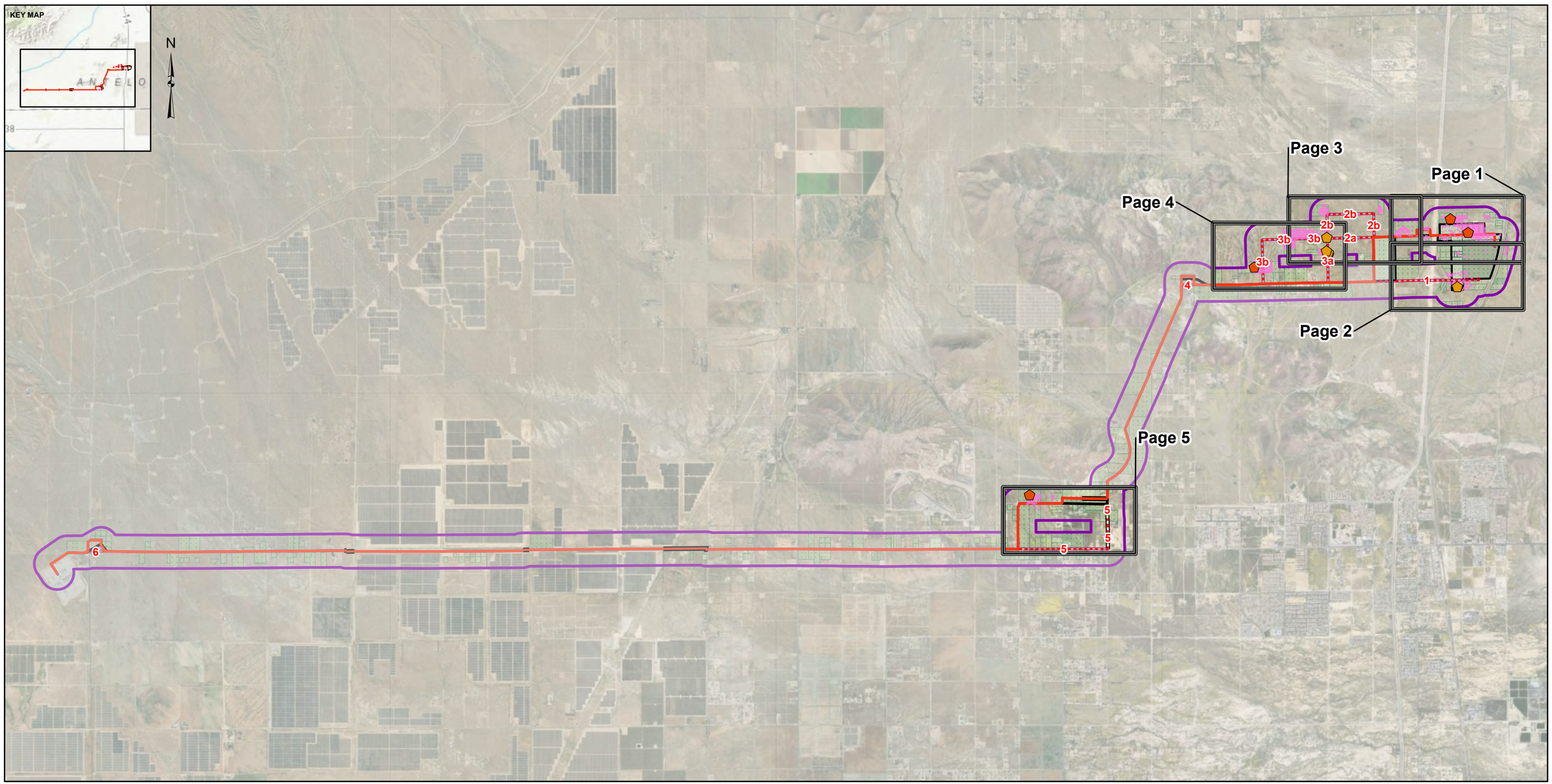
Page 3

Page 1

Page 4

Page 2

Page 5



LEGEND

Crotch's Bumble Bee Observations
- CBB Worker
- Crotch's Queen

Crotch's Bumble Bee Habitat
- Phacelia

Proposed Transmission Line
- Preferred Route, Aboveground
- Preferred Route, Underground
- Route Options 1-6, Aboveground
- Route Options 1-6, Underground
- Superseded Preferred Route,Aboveground
- Project ROW

Project Components
- WRESC Site
- Other Project Parcels
- Project Boundary
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 2

1:70,000 MILES

NOTE(S)
1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)
1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS, EPA, NPS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMIT

TITLE
CROTCH'S BUMBLE BEE HABITAT AND OBSERVATIONS MAP BOOK OVERVIEW

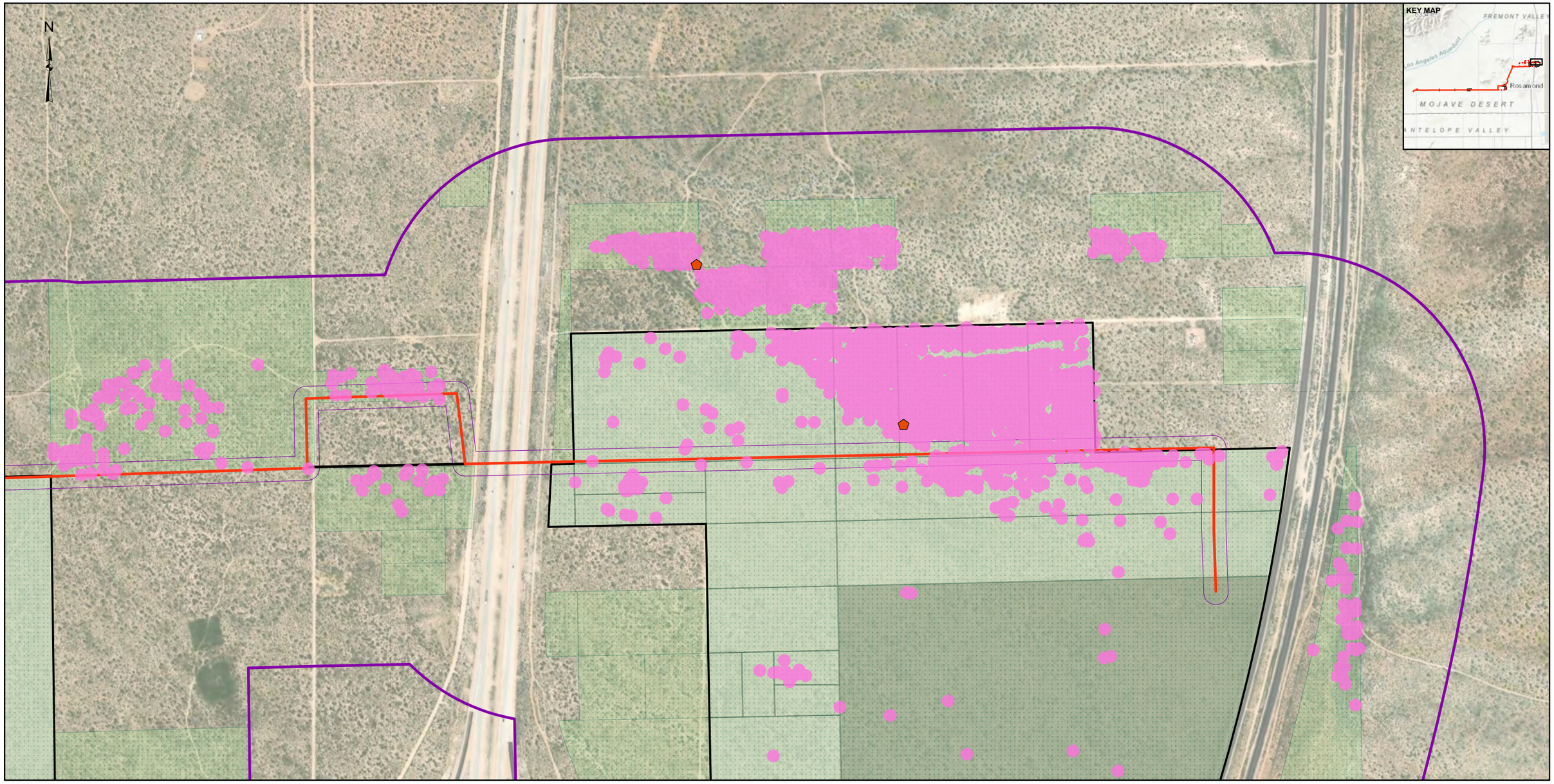
YYYY-MM-DD	2025-03-11
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	2

PATH: G:\Hydrostor\Arnet\11_GIS\TEMP\2025_03_05_KO_ITP\wHydrostor_ITP_Working_KO.aprx PRINTED: 3/11/2025 at 11:09 AM BY: USKO127009

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

1 in
0



LEGEND

Crotch's Bumble Bee Observations
- Crotch's Queen

Crotch's Bumble Bee Habitat
- Phacelia

Proposed Transmission Line
- Preferred Route, Aboveground
- Superseeded Preferred Route,Aboveground
- Project ROW

Project Components
- WRESC Site
- Other Project Parcels
- Project Boundary
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 1,000

1:6,000 FEET

NOTE(S)
1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)
1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, USGS, NGA, EPA, USDA, NPS
WORLD IMAGERY: MAXAR

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2025-03-11
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMITS

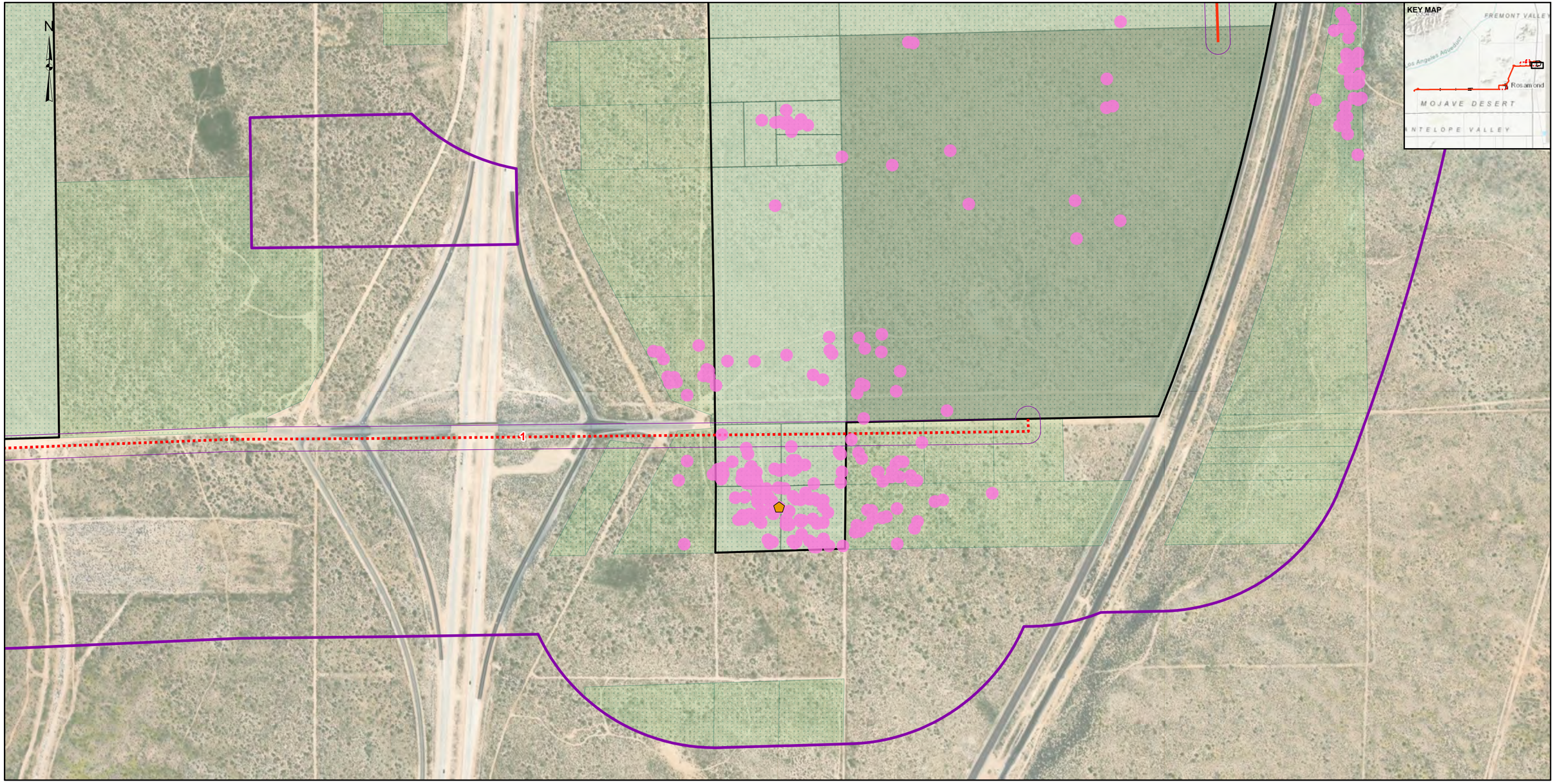
TITLE
CROTCH'S BUMBLE BEE HABITAT AND OBSERVATIONS

PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	2-1

PATH: G:\Hydrostor\Ansel\11_GIS\TEMP\20225_03_05_KO_ITP\Hydrostor ITP_Working_KO.aprx PRINTED: 3/11/2025 at 11:10 AM BY: USKO127009

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

0 1 in



LEGEND

Crotch's Bumble Bee Observations
- CBB Worker

Crotch's Bumble Bee Habitat
- Phacelia

Proposed Transmission Line
- Preferred Route, Aboveground
- Route Options 1-6, Aboveground
- Project ROW

Project Components
- WRESC Site
- Other Project Parcels
- Project Boundary
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 1,000

1:6,000 FEET

NOTE(S)
1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)
1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS, EPA, NPS
WORLD IMAGERY: MAXAR

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2025-03-11
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

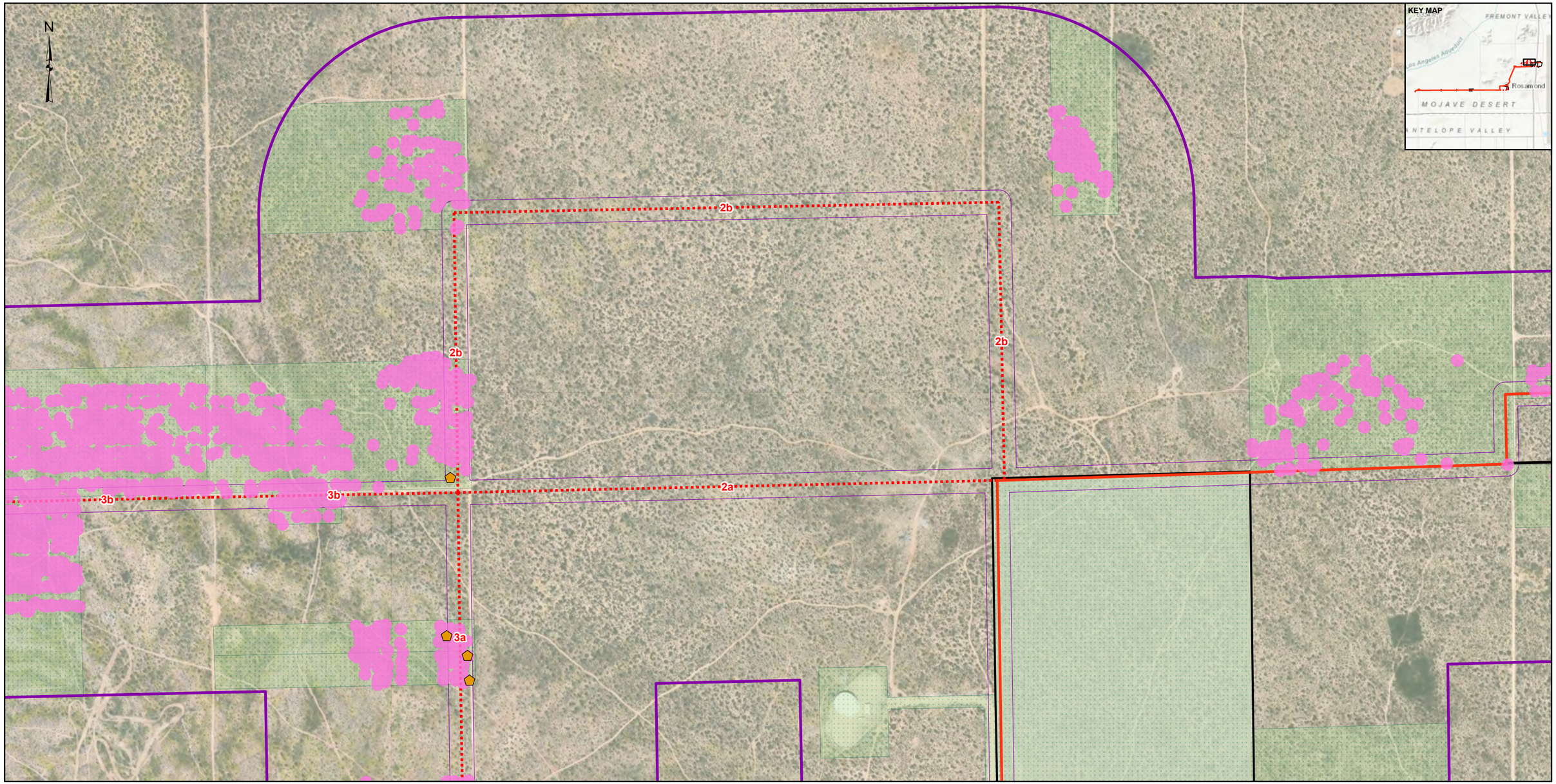
PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMITS

TITLE
CROTCH'S BUMBLE BEE HABITAT AND OBSERVATIONS

PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	2-2

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

PATH: G:\Hydrostor\Arnell\11_GIS\TEMP\2025_03_05_KO_ITP\Hydrostor_ITP_Working_KO.aprx PRINTED: 3/11/2025 at 11:10 AM BY: USKO127009



LEGEND

Crotch's Bumble Bee Observations
- CBB Worker

Crotch's Bumble Bee Habitat
- Phacelia

Proposed Transmission Line
- Preferred Route, Aboveground
- Route Options 1-6, Aboveground
- Superseeded Preferred Route,Aboveground
- Project ROW

Project Components
- Other Project Parcels
- Project Boundary
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 1,000

1:6,000 FEET

NOTE(S)
1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)
1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS, EPA, NPS
WORLD IMAGERY: MAXAR

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2025-03-11
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMITS

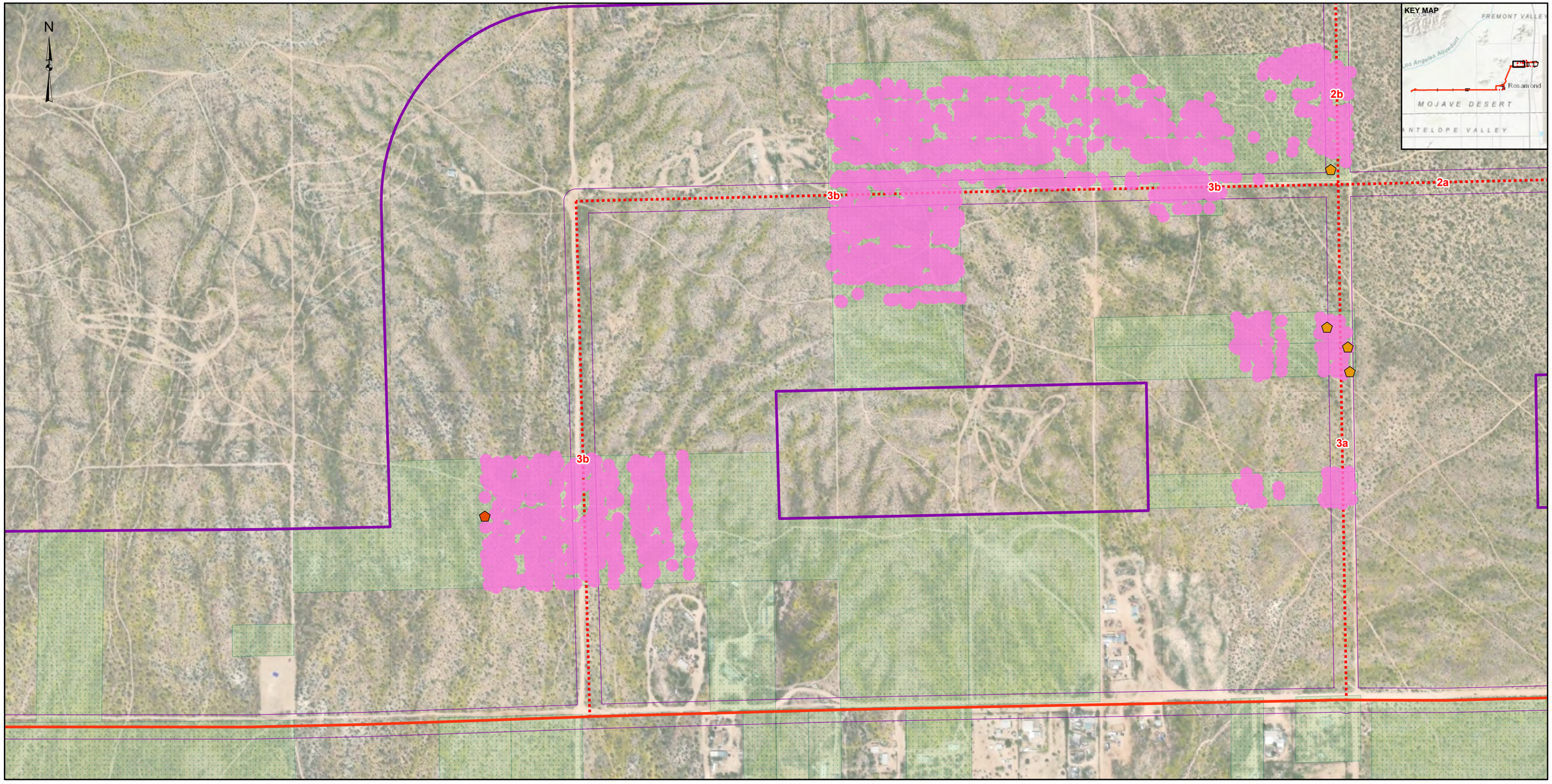
TITLE
CROTCH'S BUMBLE BEE HABITAT AND OBSERVATIONS

PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	2-3

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

1 in
0

PATH: G:\Hydrostor\Ansel\11_GIS\TEMP\2025_03_05_KO_ITP\Hydrostor_ITP_Working_KO.aprx PRINTED: 3/11/2025 at 11:10 AM BY: LISKO127009



LEGEND

Crotch's Bumble Bee Observations
- CBB Worker
- Crotch's Queen

Crotch's Bumble Bee Habitat
- Phacelia

Proposed Transmission Line
- Preferred Route, Aboveground
- Route Options 1-6, Aboveground

- Project ROW
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 1,000

1:6,000 FEET

NOTE(S)
1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)
1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS, EPA, NPS
WORLD IMAGERY: MAXAR

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMITS

TITLE
CROTCH'S BUMBLE BEE HABITAT AND OBSERVATIONS

YYYY-MM-DD	2025-03-11
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

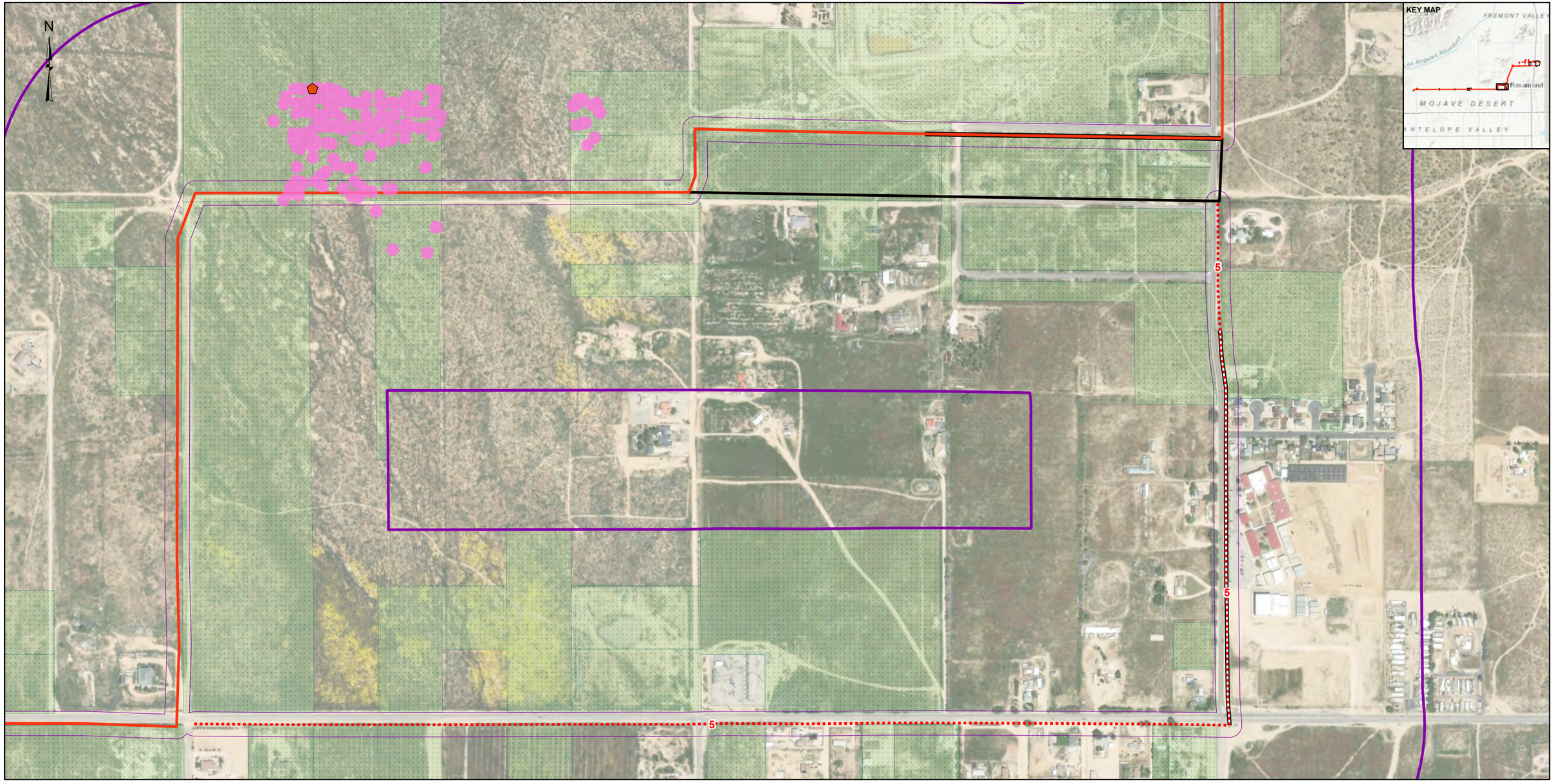
PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	2-4

PATH: G:\Hydrostor\Arnes\11_GIS\TEMP\2025_03_05_KO_ITP\HydroStor_ITP_Working_KO.aprx PRINTED: 3/11/2025 at 11:10 AM BY: USKO127009

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

1 in

0



LEGEND

Crotch's Bumble Bee Observations
- Crotch's Queen

Crotch's Bumble Bee Habitat
- Phacelia

Proposed Transmission Line
- Preferred Route, Aboveground
- Preferred Route, Underground
- Route Options 1-6, Aboveground
- Route Options 1-6, Underground
- Superseeded Preferred Route,Aboveground
- Project ROW
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 1,000

1:6,000 FEET

NOTE(S)
1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)
1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS, EPA, NPS
WORLD IMAGERY: MAXAR

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2025-03-11
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMITS

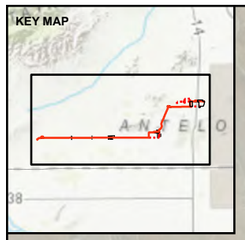
TITLE
CROTCH'S BUMBLE BEE HABITAT AND OBSERVATIONS

PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	2-5

PATH: G:\Hydrostor\Ansell\11_GIS\TEMP\2025_03_05_KO_ITP\Hydrostor_ITP_Working_KO.aprx PRINTED: 3/11/2025 at 11:10 AM BY: USKO127009

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

1 in
0



N

Page 3

Page 1

Page 2

Page 4

LEGEND

- Potential Burrowing Owl Burrows

Proposed Transmission Line

- Preferred Route, Aboveground
- Preferred Route, Underground
- Route Options 1-6, Aboveground
- Route Options 1-6, Underground
- Superseeded Preferred Route,Aboveground

- Project ROW

Proiect Components

- WRESC Site
- Other Project Parcels
- Project Boundary
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 2

1:70,000 MILES

NOTE(S)

1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)

1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA, EPA, NPS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2025-03-11
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMIT

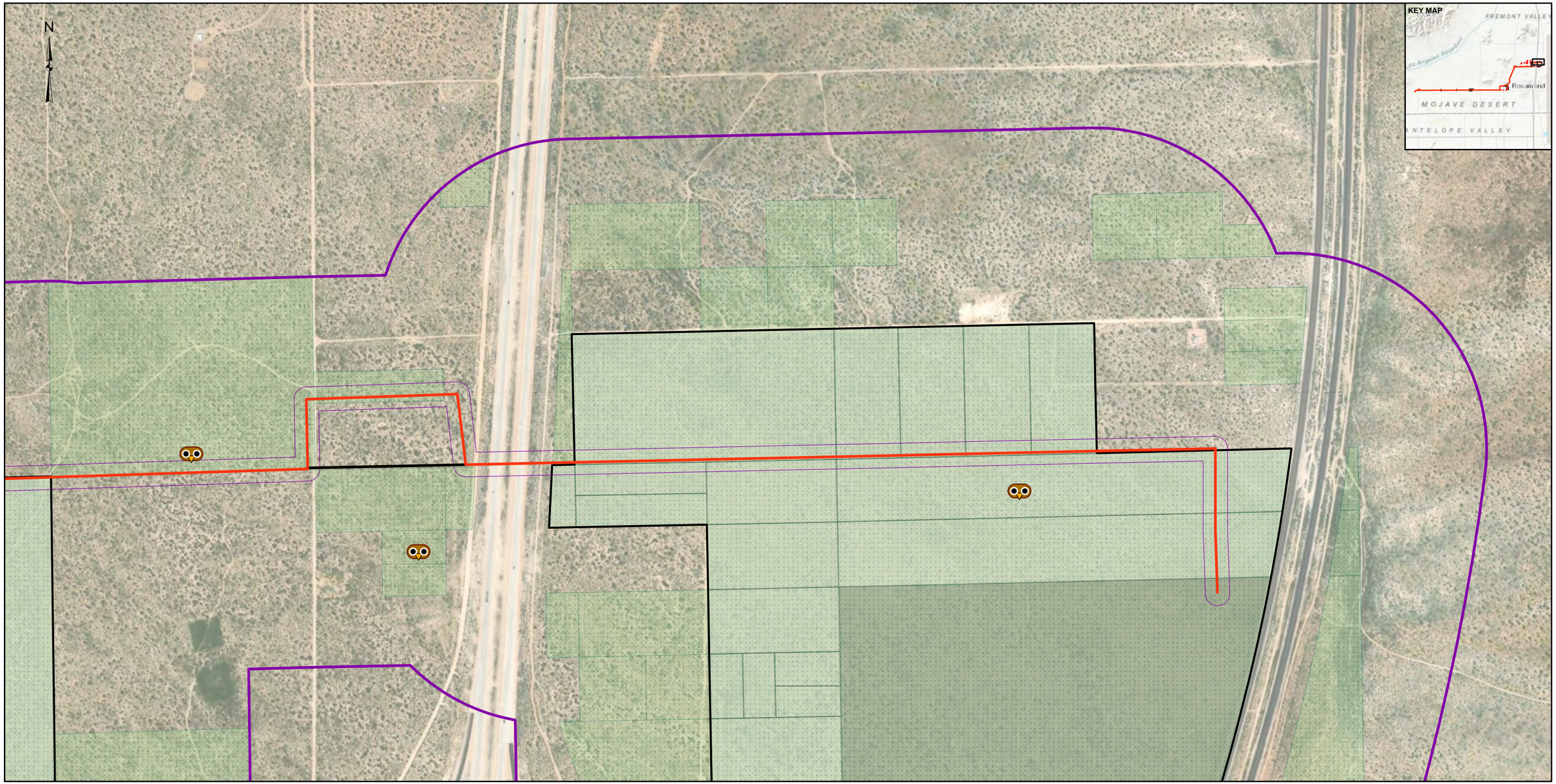
TITLE
BURROWING OWL POTENTIAL BURROWS MAP BOOK OVERVIEW

PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	3

PATH: G:\Hydrostor\Ansell\11_GIS\TEMP\2025_03_05_KO_ITP\Hydrostor_ITP_Working_KO.aprx PRINTED: 3/11/2025 at 11:16 AM BY: USKO127009

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

0 1 in



LEGEND

Potential Burrowing Owl Burrows

Proposed Transmission Line

- Preferred Route, Aboveground
- Superseeded Preferred Route,Aboveground
- Project ROW

Project Components

- WRESC Site
- Other Project Parcels
- Project Boundary
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 1,000

1:6,000 FEET

NOTE(S)

1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)

1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, USGS, NGA, EPA, USDA, NPS WORLD IMAGERY: MAXAR

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2025-03-14
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMITS

TITLE
BURROWING OWL POTENTIAL BURROWS

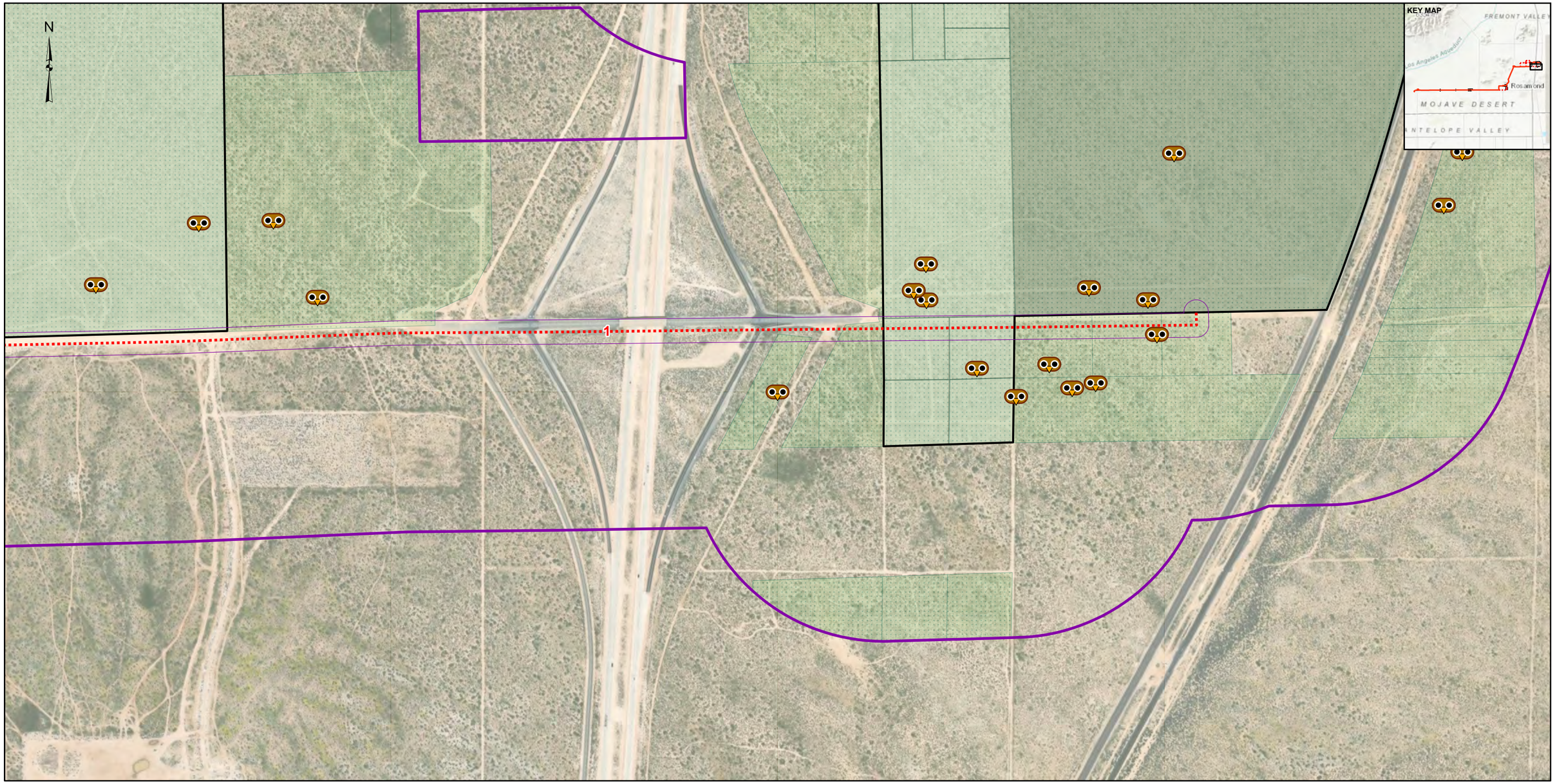
PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	3-1

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

1 in

0

PATH: G:\Hydrostor\Arcsel\11_GIS\TEMP\2025_03_05_KO_ITP\Hydrostor_ITP_Working_KO.aprx PRINTED: 3/14/2025 at 3:31 PM BY: USKO127009



LEGEND

- Potential Burrowing Owl Burrows

Proposed Transmission Line

- Route Options 1-6, Aboveground
- Project ROW

Project Components

- WRESC Site
- Other Project Parcels
- Project Boundary
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 1,000

1:6,000 FEET

NOTE(S)

1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)

1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS, EPA, NPS
WORLD IMAGERY: MAXAR

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2025-03-14
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMITS

TITLE
BURROWING OWL POTENTIAL BURROWS

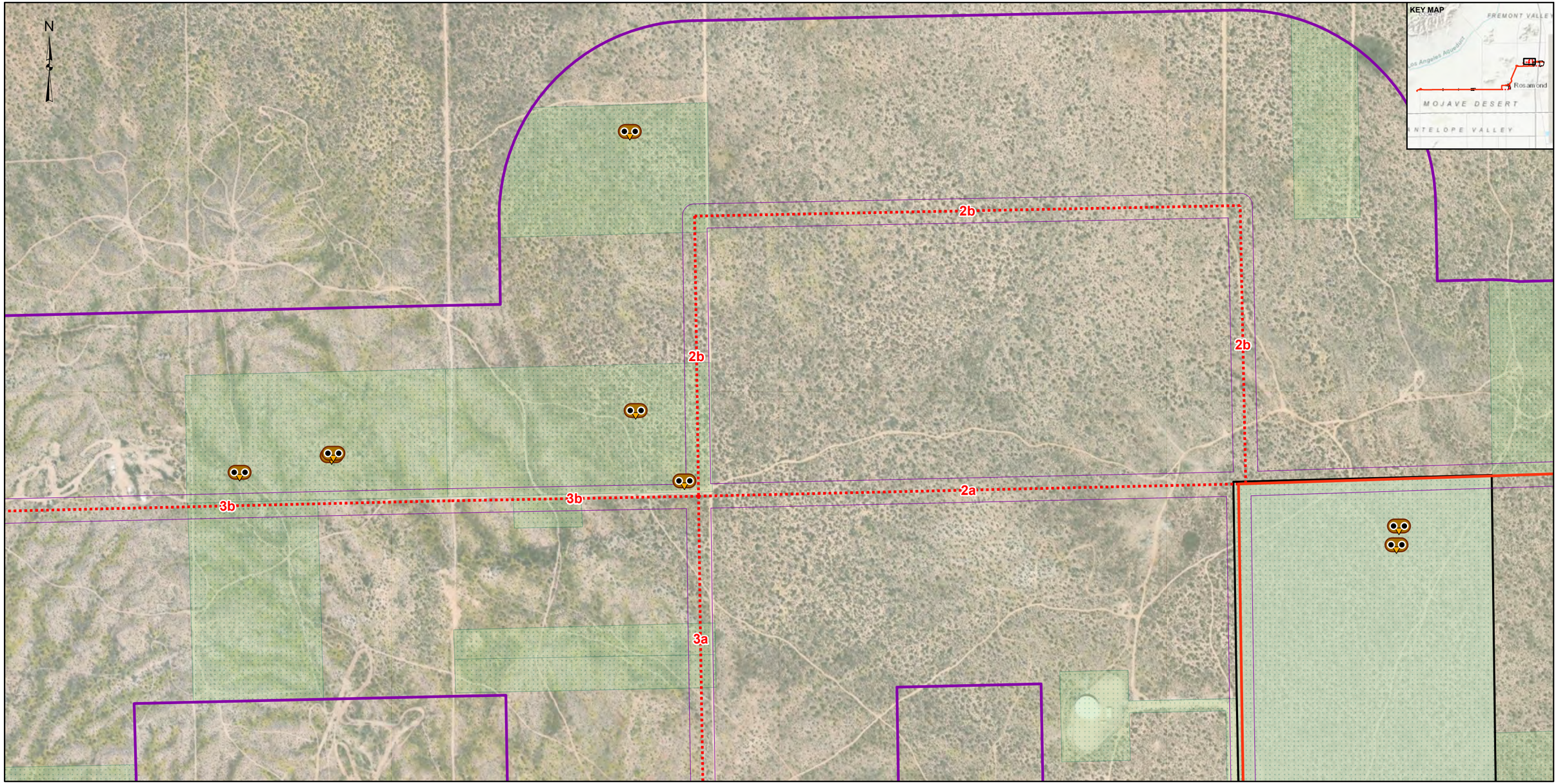
PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	3-2

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

1 in

0

PATH: G:\Hydrostor\Ansell\11_GIS\TEMP\2025_03_05_KO_ITP\wHydrostor_ITP_Working_KO.aprx PRINTED: 3/14/2025 at 3:31 PM BY: USKO127009



LEGEND

Potential Burrowing Owl Burrows

Proposed Transmission Line

- Preferred Route, Aboveground
- Route Options 1-6, Aboveground
- Project ROW

Project Components

- Other Project Parcels
- Project Boundary
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 1,000

1:6,000 FEET

NOTE(S)

1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)

1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS, EPA, NPS
WORLD IMAGERY: MAXAR

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2025-03-14
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMITS

TITLE
BURROWING OWL POTENTIAL BURROWS

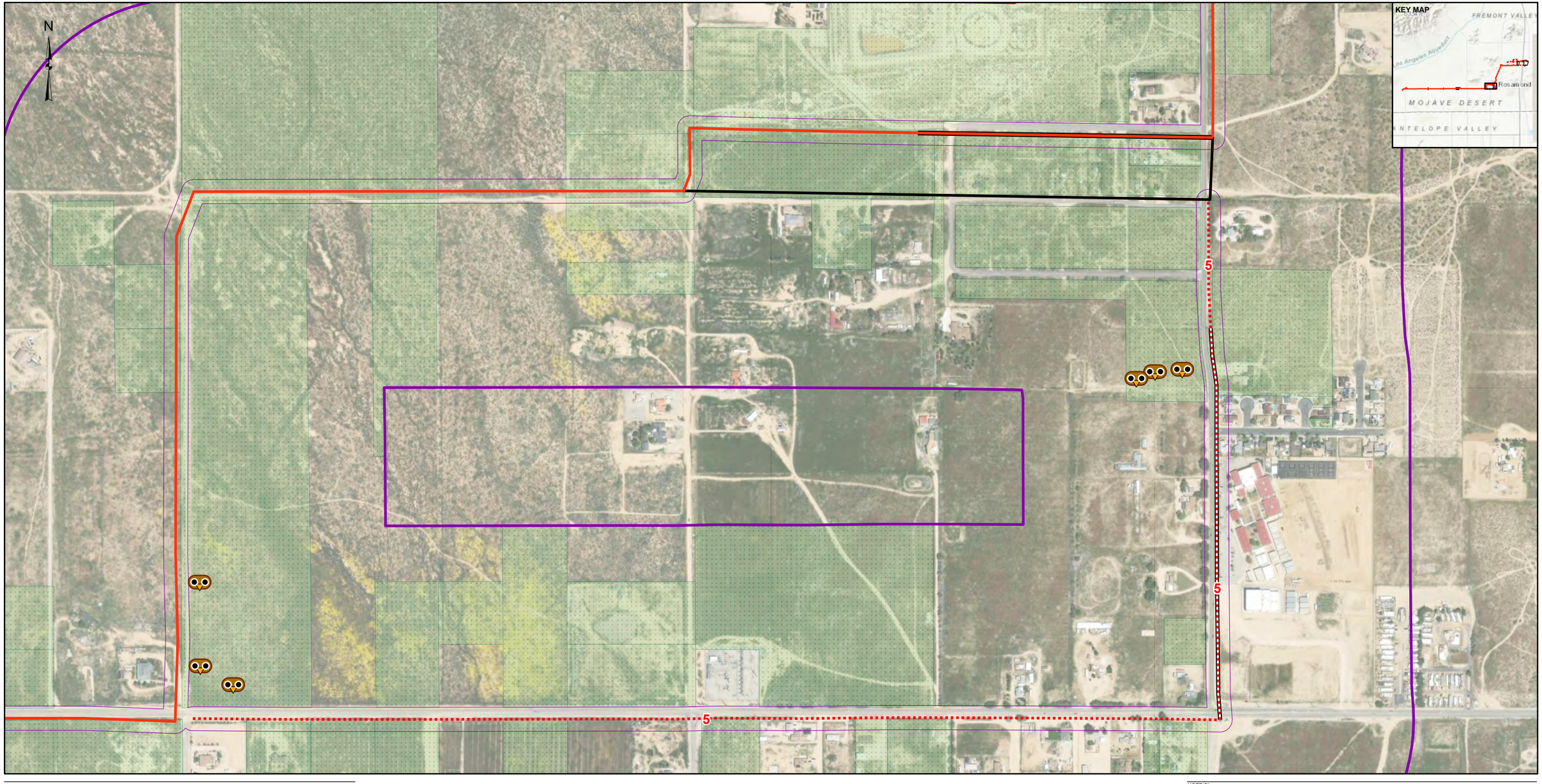
PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	3-3

PATH: G:\Hydrostor\Arcsel\11_GIS\TEMP\2025_03_05_KO_ITP\Hydrostor_ITP_Working_KO.aprx PRINTED: 3/14/2025 at 3:32 PM BY: USKO127009

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

1 in

0



LEGEND

- Potential Burrowing Owl Burrows

Proposed Transmission Line

- Preferred Route, Aboveground
- Preferred Route, Underground
- Route Options 1-6, Aboveground
- Route Options 1-6, Underground
- Superseeded Preferred Route,Aboveground
- Project ROW
- 1,000 ft Buffer Around Project Parcels and Transmission Line ROW
- Areas with Right of Entry

0 1,000

1:6,000 FEET

NOTE(S)

1. PROJECT ROW IS 62.5 FT ON EITHER SIDE OF THE PROPOSED TRANSMISSION LINE ROUTE.
2. ALL BIOLOGICAL OBSERVATIONS ARE WITHIN 1,000 FT OF THE PROJECT AREA AND WERE SURVEYED FROM AN AREA WITH RIGHT OF ENTRY.

REFERENCE(S)

1. PROPOSED TRANSMISSION LINE: HYDROSTOR, 2025
2. BIOLOGICAL SURVEY DATA: WSP, 2023,2024
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS, EPA, NPS
WORLD IMAGERY: MAXAR

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2025-03-14
DESIGNED	MK
PREPARED	KO
REVIEWED	KM
APPROVED	JP

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
INCIDENTAL TAKE PERMITS

TITLE
BURROWING OWL POTENTIAL BURROWS

PROJECT NO.	PHASE	REV.	FIGURE
US0029687.8167	200	0	3-4

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

1 in

0

PATH: G:\Hydrostor\Arnell\11_GIS\TEMP\2025_03_05_KO_ITP\Hydrostor_ITP_Working_KO.aprx PRINTED: 3/14/2025 at 3:32 PM BY: USKO127009

Section 32

Section 33

Section 34

Section 5

Section 4

Section 3

Project Boundary

P2 N

P1

P2 S

VH

WRESC Site

CA-14 S

CA-14 N

Sierra Hwy

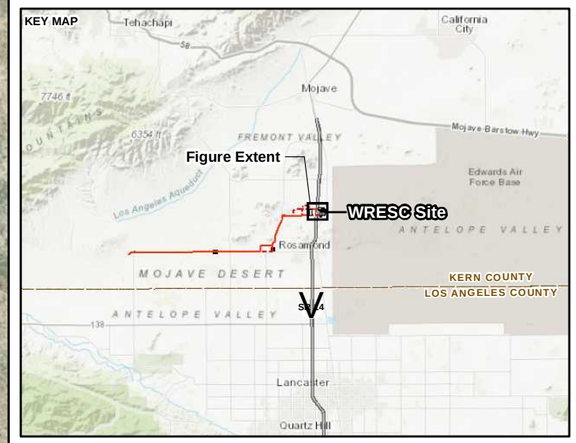
T10N R12W

T09N R12W

LEGEND

- Project Boundary
- WRESC Site
- P1
- P2 N
- P2 S
- VH
- Project Parcel Boundary
- PLSS Township and Range
- PLSS Section

KEY MAP



0 700 1,400

1 " = 700 feet FEET

REFERENCE(S)

1. PARCEL BOUNDARIES - KERN COUNTY GIS DEPT.
2. PLSS SECTION, TOWNSHIP, AND RANGE - CA DEPT. CONSERVATION
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. 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

CLIENT
GEM A-CAES LLC

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
SUPPLEMENTAL AFC

TITLE
PROJECT DEFINED AREAS

CONSULTANT

YYYY-MM-DD	2024-02-22
DESIGNED	SHL
PREPARED	MK
REVIEWED	SH
APPROVED	VG/LL

PROJECT NO.	PHASE	REV.	FIGURE
31406639.003	01	0	5.0-1

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

1in

0

PATH: G:\Hydrostor\Ansel\99_PROJECTS\31406639.003_Hydrostor\Ansel_Section3_and_5\31406639.003_Section5\02_PRODUCTION\MXD\FIGURES\Rev0\31406639-003_01_F5.0-1_Rev0_ProjectDefinedAreas.mxd PRINTED ON: 2024-02-22 AT: 10:18:36 AM

wsp.com