CORAL MOUNTAIN RESORT

DRAFT EIR

SCH# 2021020310

TECHNICAL APPENDICES

Focused Bat Survey Report
Appendix D.2

June 2021

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

May 6, 2021

Garret Simon
CM Wave Development, LLC
2440 Junction Place, Suite 200
Boulder, Colorado 80301

Subject: Results of Focused Bat Surveys for the Proposed Wave at Coral Mountain Development Project in La Quinta, Riverside County, California

Dear Mr. Simon:

This letter documents the results of focused bat surveys performed by LSA Associates, Inc. (LSA) for the proposed Wave at Coral Mountain Project (project). The study area for the proposed project site comprises approximately 385 acres and is situated south of 58th Avenue and directly west of Madison Street in the City of La Quinta, in Riverside County, California. In order to determine whether the proposed project could result in potential adverse effects to bat species, a daytime bat-roosting habitat assessment was conducted to locate any suitable bat-roosting habitat within the study area. Follow-up nighttime acoustic and emergence surveys were performed in April 2021 at locations that were identified as having the potential to house roosting bats. In addition to discussing the results of the focused bat surveys, this document also provides recommendations to minimize potential project-related adverse effects to roosting bats.

It should be noted that the focused nighttime survey results and the associated recommendations provided in this document are preliminary, and will be updated following the completion of additional nighttime acoustic and emergence surveys in June 2021. Performing the surveys in June, during the peak period of the maternity season when all local bat species can be expected to occupy their maternity roosts, will maximize the probability of detection for all bat species that may maternity roost within the study area.

BAT NATURAL HISTORY AND REGULATORY CONTEXT

Bats that occur in Southern California are the primary predators of nocturnal flying insects and are largely adapted to a variety of habitats. Bat populations are generally declining throughout Southern California due to various factors, including loss of natural roosting and foraging habitats, exposure to pesticides and pathogens, and extermination (Miner and Stokes 2005). Because bats have low reproductive turnover (most species have only one young per year and only a few species have twins or multiple births) and high juvenile mortality, it can take many years for a population of bats to recover from any impacts that result in mortality or even a decrease in reproductive ability. As natural roost sites become scarcer due to urban development and changes in land use, the use of human-made structures (e.g., buildings) for roost sites by some bat species has increased as bats seek alternative roosting options. However, these human-made roosting sites are also highly vulnerable because bats may be driven out or killed once they are discovered occupying these structures. Therefore, as urban and suburban development occurs across the landscape, many of these areas may act as habitat "sinks"[1] where bats may at first appear to be relatively common and may even be attracted to human-made structures, but then decrease in abundance over time as urbanization of that area continues (Miner and Stokes 2005). The protection of bat-roosting habitat, particularly habitat identified as maternity or nursery sites, is vitally important to prevent adverse effects to, and further loss of, remaining bat populations.

[1] A habitat sink refers to an area where the productivity of a given species is insufficient to offset mortality.

Day roosts protect bats from predators and the elements during the day while they are resting and/or rearing their young. Examples of day-roosting sites include, but are not limited to, human-made structures, trees, caves, and cliff or rock crevices. Some types of day roosts where bats are particularly vulnerable to disturbance include: maternity colonies, where female bats congregate in the spring and summer months to give birth and raise young, and hibernacula, where bats enter a period of hibernation during the winter months. A night roost, on the other hand, refers to a structure or structural feature (natural or human-made) in which bats roost during the evening between foraging bouts. Examples of night roosts include crevices, cavities, corners, and recessed open spaces that are sheltered from the wind. Night roosts are typically situated in or near a foraging area and play an important role in the energetics and social interaction of bats. When a night roost is eliminated, the energetics needed for bats to successfully use the surrounding foraging area may be negatively affected. Day roosts may also double as night roosts, particularly if they are situated in or near a foraging area. Many bat species, particularly those that roost in relatively permanent features, have a high degree of fidelity to roost sites (Lewis 1995).

Because bats have separate roosting and foraging habitat requirements, it is expected that some bats may use one area for foraging and another for roosting. While more extensive and direct impacts to bats occur through removal, destruction, or disturbance of roosts, indirect impacts (e.g., decline of the prey base due to loss or modification of foraging habitat) can also be substantial. Therefore, when assessing an area with regard to proposed alterations to habitat, a landscape-level approach is required to adequately determine potential impacts to bats.

Various regulations afford protections to bats, which are classified as indigenous nongame mammal species, regardless of their status under the California or Federal Endangered Species Acts. These regulations include Title 14, Section 251.1 of the California Code of Regulations, which prohibits harassment (defined in that section as an intentional act that disrupts an animal's normal behavior patterns, including breeding, feeding, or sheltering) of nongame mammals (e.g., bats), and California Fish and Game Code Section 4150, which prohibits "take"[1] or possession of all nongame mammals or parts thereof. Any activities resulting in bat mortality (e.g., the destruction of an occupied bat roost that results in the death of bats), disturbance that causes the loss of a maternity colony of bats (resulting in the death of young), or various modes of nonlethal pursuit or capture may be considered "take" as defined in Section 86 of the California Fish and Game Code. In addition, impacts to bat maternity colonies, which are considered native wildlife nursery sites, could be considered potentially significant under the California Environmental Quality Act.

METHODS

The focused bat surveys comprised two parts. The first part consisted of a daytime bat-roosting habitat assessment conducted on November 13 and 14, 2020. The second component consisted of nighttime acoustic and emergence surveys conducted on April 27 and 29, 2021, at locations that were identified as containing suitable maternity-roosting habitat during the bat-roosting habitat assessment. All aspects of the focused bat surveys were conducted and/or directly supervised by LSA Senior Biologist and bat specialist Jill Carpenter, and detailed methods for each survey component are described below.

[1] Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Bat-Roosting Habitat Assessment

During the afternoons of November 13 and 14, 2020, LSA Senior Biologist and bat specialist Jill Carpenter conducted a daytime bat-roosting habitat assessment at the study area. During this assessment, potential bat-roosting sites (e.g., trees, rock outcrops, and buildings) were visited on foot and examined for features such as crevices or recessed spaces that may be suitable for use as day- and/or night-roosting habitat. Where potential roosting features were accessible, Ms. Carpenter also inspected those features for the presence of bats or any bat sign (e.g., guano, urine staining, or vocalizations) indicating current or past use of an area by roosting bats. Any feature containing suitable day-roosting habitat was also assessed for its potential to be used as a maternity roost. Trees were also assessed for their potential to serve as roosting habitat for foliage-roosting bat species such as hoary bats (*Lasiurus cinereus*), western red bats (*Lasiurus blossevillii*), and western yellow bats (*Lasiurus xanthinus*); however, this type of roosting is difficult to confirm during a daytime assessment because foliage-roosting species tend to roost singly, beneath leaves, and may roost in a different location each night.

Nighttime Acoustic and Emergence Surveys

Follow-up nighttime acoustic and emergence surveys were performed on April 27 and 29, 2021, at potential bat-roosting sites (e.g., trees with crevices or cavities, rock outcrops, and buildings) identified during the habitat assessment to determine whether any of these sites are occupied by maternity colonies. These surveys also served to assess the level of bat foraging and roosting activity at each location, and to visually estimate the approximate number of any bats utilizing each feature.

Each nighttime acoustic and emergence survey was initiated approximately 20 minutes before sunset and continued until one full hour after sunset to determine whether a given roost feature was used by bats for roosting. All nighttime surveys were performed under warm weather conditions appropriate for the season, winds were below 5 miles per hour (mph), and there was no risen moon. Biologists from LSA assisted the bat specialist in performing the exit counts, operating acoustic equipment, and documenting observations to correlate with the acoustic recordings collected during the surveys. The bat specialist directly supervised all surveys and maintained constant communication and oversight with all biologists participating in the given nighttime surveys. During the emergence period, each observer used night vision goggles (military grade PVS-7, Generation 3) with auxiliary infrared lights and was positioned at a vantage point that optimized visibility of any bats that could exit or enter the roost feature (e.g., tree, snag, or rock outcrop) being observed. The number of bats exiting or entering a given roost feature during the emergence period was recorded using handheld tally counters, and species were identified using a combination of visual and acoustic techniques.

Anabat Express and Swift (Titley Scientific) ultrasound detectors were used to collect acoustic data to aid in identifying any bat species roosting within the trees or that occur in the vicinity, and secure digital (SD) memory cards were used to record the call files. To gather more complete information about bat activity throughout the evenings, acoustic detectors were left on site overnight on April 27 and 28, and were then moved to new locations on the afternoon of April 29 before being retrieved at the conclusion of the April 29 survey. It is important to note that not all bats recorded next to potential roost sites are those exiting or entering the roost feature in question. Some are foraging bats en route to or from other areas. It is essential, therefore, to have observers on site in order to correlate calls with visual observations. It is also important to note that the species composition and activity levels recorded during a single nighttime visit to any site may not necessarily reflect long-term patterns of use (e.g., seasonal and nightly use of an area).

Acoustic data were subsequently analyzed using AnalookW (for echolocation call sequences recorded on the Expresses) or Sonobat DataViewer 4.5 acoustic analysis software (for full-spectrum call sequences recorded on the Swifts). Species identifications of acoustic data, where possible, were made by comparing call recordings with a library of "voucher" calls from known hand-released bats. Some limitations are inherent in acoustic monitoring and in the analysis of acoustic data; these include (but are not limited to) human bias and past experience in data interpretation, as well as the fact that some species are not equally detectable or may not be recorded at all. Some bats (e.g., Mexican free-tailed bats [*Tadarida brasiliensis mexicana*]) emit loud low-frequency echolocation calls that can be recorded from great distances and will be overrepresented in the data, while "whispering" bats (e.g., Townsend's big-eared bats [*Corynorhinus townsendii*]) emit faint calls that may not be recorded at all. Some bat species such as pallid bat (*Antrozous pallidus*) and California leaf-nosed bat (*Macrotus californicus*) frequently do not echolocate and instead listen for prey-produced sounds; consequently, these species are often not detected even when present in an area. In addition, not all echolocation call sequences are identifiable because different bat species may use similar types of echolocation calls, or the same species may use different types of echolocation calls based on the perceptual task and the immediate environment or habitat. Multi-species acoustic groups are often used to categorize echolocation calls that cannot be definitively identified to species. The acoustic groups relevant to the biological study area include 50 kilohertz (kHz) Myotis (steep echolocation calls terminating near 50 kHz that could belong to California myotis [*Myotis californicus*] or Yuma myotis [*Myotis yumanensis*]), Q25 (variable echolocation calls terminating between 25 and 35 kHz that can be produced by multiple species including Mexican free-tailed bat, big brown bat (*Eptesicus fuscus*), and pallid bat), and the LACI/NYFE group (relatively flat echolocation calls at 16–18 kHz that could be produced by hoary bats [LACI] or pocketed free-tailed bats [NYFE]). Because the flight behavior and foraging patterns can differ between species, visual observation during the survey often aids in making more definitive identifications.

RESULTS

Suitable day-roosting habitat for a variety of bat species was observed in trees, rock outcrops associated with Coral Mountain, and an abandoned adobe within the study area. Vegetation within the study area includes desert saltbush scrub, tamarisk scrub, and mesquite hummock, with most of the site characterized as open desert scrub. Two large stands of blue palo verde (*Parkinsonia florida*) are present in the western portion of the study area. Dominant plant species include fourwind saltbush (*Atriplex canescens*), bush seepweed (*Suaeda nigra*), athel (*Tamarix aphylla*), and common Mediterranean grass (*Schismus barbatus*). Although some of the land is disturbed in the southern and northeast portions of the study area, these different vegetation types and their associated insect fauna provide foraging habitat for a variety of bat species. In addition to providing potential roosting habitat for several bat species, the palo verde stands in the western portion of the study area may also serve as foraging habitat for species such as the California leaf-nosed bat and pallid bat.

A total of eight bat species were confirmed as present during the nighttime surveys in April 2021, while an additional five bat species were not detected but have the potential to occur in the study area. These species are listed in Table A, below, with descriptions of their corresponding roosting habitat characteristics as well as the probability of that species roosting within the study area. All identified potential roosting locations are mapped on Figure 1, and representative photos are shown on Figure 2 (figures are provided as an attachment to this report). More detailed descriptions of each of the potential roost sites (i.e., trees, rock outcrops, and adobe building) observed within the study area are provided below.

Table A: Bat Species That May Occur in Study area

Species Name (Scientific/Common)	Status[1]	Description of Roosting Habitat	Probability of Occurrence within Study Area
FAMILY: PHYLLOSTOMIDAE			
Macrotus californicus California leaf-nosed bat	US: FSS CA: SSC WBWG: H	Day roosts primarily in caves and mines, but occasionally roosts in anthropogenic structures such as bridges. Foraging habitat is predominantly in desert washes containing palo verde, ironwood, or smoke trees. Diet consists primarily of large arthropods (e.g., katydids and sphinx moths) that they glean from vegetation. This species has also been documented consuming lizards. Examples of prey include antlions, beetles, centipedes, cicadas, crickets, grasshoppers, Jerusalem crickets, katydids, moths, and scorpions (Brown and Berry 1994).	**High.** Suitable caves for day roosting present in the rock outcrops on the western edge of the study area. Known to occur in natural caves along the shoreline of Lake Cahuilla in the vicinity (Brown and Berry 1994). Palo verde stands in western portion of study area provide preferred foraging habitat, and it is likely that this species is present within the study area.
FAMILY: VESPERTILIONIDAE			
Antrozous pallidus Pallid bat	US: FSS CA: SSC WBWG: H	Roosts in crevices in rocky outcrops and cliffs, caves, mines, hollows or cavities of large trees, and anthropogenic structures such as bridges and buildings; may also roost near the ground in rock piles. Foraging habitat includes grassland, open scrub, open forest, and gravel roads. Diet composition varies among populations, but considered opportunistic generalists. Glean a variety of arthropod prey from surfaces, but also capture insects on the wing. Examples of prey include antlions, beetles, centipedes, cicadas, crickets, grasshoppers, Jerusalem crickets, katydids, moths, and scorpions (Rambaldini 2005).	**Detected.** Suitable trees and rock outcrops for day roosting present in study area. Suitable foraging habitat in open desert scrub. Visually observed emerging from roosts in rock outcrops, as well as foraging in palo verde stands at the western portion of the study area.
Eptesicus fuscus Big brown bat	US: – CA: – WBWG: L	Roosts in trees, caves, and crevices in cliff faces and in anthropogenic structures such as bridges, buildings, and mines. Typically forages for heavy-bodied insects along tree canopies, over meadows, or along water courses within a few kilometers of roost sites. Primarily beetle (coleopteran) specialists, but diet also includes hemipterans, dipterans, lepidopterans, trichopterans and hymenopterans (Perkins 2005).	**Detected.** Suitable trees and rock outcrops for day roosting present in study area. Crevices in adobe building are also suitable for roosting. Forages in study area.
Lasiurus blossevillii Western red bat	US: FSS CA: SSC WBWG: H	Typically solitary. Roosts in the foliage of broad-leafed trees or shrubs within streams or fields, in orchards, and occasionally urban areas; commonly roosts in mature cottonwoods and sycamores. Also documented roosting in mature eucalyptus trees and palm trees. Strongly associated with riparian corridors, but has also been observed foraging around street lights and flood lights in urban settings. Examples of prey include homopterans, coleopterans, hymenopterans, dipterans, and lepidopterans. (Bolster 2005a).	**Low.** Typically more associated with riparian habitats, but has been documented in desert scrub habitats. May occur in study area.

Table A: Bat Species That May Occur in Study area

Species Name (Scientific/Common)	Status[1]	Description of Roosting Habitat	Probability of Occurrence within Study Area
Lasiurus cinereus Hoary bat	US: – CA: – WBWG: M	Solitary. Roosts in the foliage of coniferous, deciduous, and evergreen trees and shrubs, often at the edge of a clearing. Typically roosts near the ends of branches approximately 3–12 meters above the ground. Generally considered to prefer moths, but also consumes beetles, flies, grasshoppers, termites, dragonflies, and wasps. Migratory wintering sites have not been well documented, and specific migration routes are not known (Bolster 2005b).	**Low.** Suitable large trees present for day roosting, including athel tamarisk (*Tamarix aphylla*). Unlikely to be present during the summer months. May forage in study area.
Lasiurus xanthinus Western yellow bat	US: – CA: SSC WBWG: H	Roosts hanging from the underside of leaves in trees. Commonly roosts in the dead fronds of native and nonnative palm trees, though has also been documented roosting in cottonwood trees. Foraging areas include natural and non-natural water features, canyons, riparian areas, orchards, and residential areas. Diet includes Coleoptera, Diptera, Hemiptera, Homoptera, Lepidoptera, and Orthoptera (Williams 2005).	**Detected.** Suitable palm tree for day roosting present at northern edge of the study area. Forages in study area.
Myotis californicus California myotis	US: – CA: – WBWG: L	Roosts in crevices within caves, mines, and rocky hillsides, as well as under tree bark and in buildings. Forages in a variety of habitats. Typically consumes moths and flies, but is known to eat other insects (Bogan et al. 2005a).	**Detected.** Suitable trees and rocky outcrops present for day roosting. Crevices in adobe building are also suitable for roosting. Forages in study area.
Myotis yumanensis Yuma myotis	US: – CA: SA WBWG: LM	Roosts in crevices within bridges, buildings, culverts, cliff crevices, caves, mines, and trees, typically near a perennial water source. Also documented roosting in swallows nests. Forages primarily on aquatic emergent insects; example prey items include caddis flies, flies, midges, small moths, and small beetles (Bogan et al. 2005b.	**High.** Suitable trees for day roosting present. Crevices in adobe building are also suitable for roosting. May forage over open water in golf courses and water impoundments immediately adjacent to the study area.
Parastrellus hesperus Western canyon bat	US: – CA: – WBWG: L	Roosts in small crevices in rocky canyons, caves, mines, bridges, culverts, and outcrops; may roost under rocks or in small burrows. Feeds on small swarming insects such as flying ants, mosquitoes, fruit flies, leafhoppers, and ants (Brown 2005a).	**Detected.** Suitable rock outcrops present for day roosting. Observed foraging in study area.
FAMILY: MOLOSSIDAE			
Eumops perotis Western mastiff bat	US: – CA: SSC WBWG: H	Primarily a cliff-dwelling species, roosting under exfoliating rock slabs and in crevices in boulders and buildings. May forage considerable distances from roost sites, and foraging habitat includes dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas. Consumes primarily large moths, but also eats beetles, crickets, and katydids (Siders 2005).	**Detected.** Suitable rock outcrops for day roosting present. Heard foraging over study area.

Table A: Bat Species That May Occur in Study area

Species Name (Scientific/Common)	Status[1]	Description of Roosting Habitat	Probability of Occurrence within Study Area
Nyctinomops femorosaccus Pocketed free-tailed bat	US: – CA: SSC WBWG: M	Primarily in crevices in cliffs, high rocky outcrops, and slopes. Consumes mainly large moths, but also eats grasshoppers, beetles, crickets, leafhoppers, and flying ants (Navo 2005a).	**Detected.** Suitable rock outcrops for day roosting present. Heard foraging over study area.
Nyctinomops macrotis Big free-tailed bat	US: – CA: SSC WBWG: MH	Roosts mainly in crevices in cliffs, although there is some documentation of roosting in buildings, caves, and tree cavities. Found in desert shrub, woodlands, and evergreen forests. Consumes mainly large moths, but also eats grasshoppers, beetles, crickets, leafhoppers, and flying ants (Navo 2005b).	**Moderate.** Suitable rock outcrops for day roosting present. May forage in study area.
Tadarida brasiliensis Mexican free-tailed bat	US: – CA: – WBWG: L	Roosts in caves, rock crevices on cliff faces, and anthropogenic structures such as mines, culverts, tunnels, and bridges. Also documented roosting in swallows nests. Highly colonial. Forages over a variety of habitats; consuming mostly moths, but also flying ants, weevils, stink-bugs and ground beetles (BCI 2005).	**Detected.** Suitable rock outcrops for day roosting present. Crevices in adobe building are also suitable for roosting. Forages in study area.

[1] All bat species are protected under the California Fish and Game Code; status categories include California Department of Fish and Wildlife (CDFW) Species of Special Concern (SSC) and Special Animal (SA), as well as Western Bat Working Group (WBWG) conservation priority designations of High (H), Medium (M), and Low (L)
FSS = Forest Service Sensitive species. Taxa identified by the U.S. Forest Service in Region 5 (Pacific Southwest Region) that are not listed or proposed for listing under the federal Endangered Species Act but receive special management consideration within the National Forest.

Tree/Snag Roosts

Suitable cavities and crevices for roosting bats, including those found in broken limbs and beneath exfoliating bark, were observed in snags and in several of the mature palo verde trees present in the western portion of the study area. Bat species that occur or may occur in the study area and are known to commonly utilize crevices and cavities in trees or snags as day roosts (including maternity roosts) include pallid bat, big brown bat, California myotis, and Yuma myotis.

Bats may also day roost in the dead frond "skirt" of the palm tree (*Washingtonia* sp.) near the northern boundary of the study area. The western yellow bat, a California Department of Fish and Wildlife (CDFW) Species of Special Concern (SSC), is a foliage-roosting species that is considered an obligate palm-roosting bat and is found throughout the Coachella Valley (Mumford and Zimmerman 1963; Ortiz and Barrows 2014). In addition to western yellow bat, at least seven other bat species that may occur in the study area have also been documented using palm trees as roosts, including western mastiff bat (*Eumops perotis*), Mexican free-tailed bat, big brown bat, western red bat, hoary bat, pallid bat, and canyon bat (*Parastrellus hesperus*). It is presumed based on their roosting ecology that any Myotis species (*Myotis* spp.) is likely to use palm trees for roosting. Big brown bats and some myotis species have also been documented using palm trees as maternity roosts, so it is possible that any of the palm trees could be used for maternity roosting by species other than western yellow bat.

Foliage-roosting bats such as hoary bats and western red bat may roost in the foliage of the palo verde and athel trees within the study area; however, it is unlikely that either of these species would maternity roost within the study area. The presence of foliage-roosting bats is difficult to confirm during surveys due to the

nature of this roosting behavior (these species tend to roost singly, beneath leaves, and may roost in a different location each night).

Extensive foraging activity by various bat species, including pallid bat, was observed in the vicinity of the palo verde tree stands during the April 2021 emergence surveys. Although no bats were observed roosting in the palm tree or in any of the palo verde trees during the April 2021 emergence surveys, it should be noted that some bat species might not be congregated in their maternity roost sites until May. Therefore, these areas will be surveyed again in June 2021 to maximize the probability of detection for all bat species that may maternity roost within the study area.

Rock Crevice and Cave Roosts

The western portion of the study area includes rock outcrops associated with Coral Mountain. Crevices and caves suitable for roosting were observed along this rocky hillside; these could be used by a variety of bat species for roosting, including pallid bat, big brown bat, California myotis, canyon bat, pocketed free-tailed bat (*Nyctinomops femorosaccus*), big free-tailed bat (*Nyctinomops macrotis*), western mastiff bat, and Mexican free-tailed bat.

During the nighttime acoustic and emergence surveys in April 2021, over a hundred bats were observed emerging from one section of the rock outcrops. While most of the bats were not visually identifiable to species, at least two of these bats were visually identified as pallid bats, confirming that this species roosts within the study area. These areas will be surveyed again in June 2021, when all local bat species have settled into their maternity roost sites, to gather more specific information on numbers and species of bats present.

Building Roosts

An abandoned adobe building associated with a former citrus ranch is present near the middle of the site. This building is in a state of disrepair, and has sustained fire damage and is missing a substantial portion of its roof. Nonetheless, this structure contains crevices suitable for use by day- and night-roosting bats at various interfaces between the adobe bricks and wooden window frames and doors, as well as at the edges of the roof. Bat species with potential to roost in these crevices include pallid bat, big brown bat, California myotis, and Mexican free-tailed bat.

Although no bats were observed roosting in the abandoned adobe during the April 2021 emergence surveys, it should be noted that some bat species might not be congregated in their maternity roost sites until May. Therefore, these areas will be surveyed again in June 2021 to maximize the probability of detection for all bat species that may maternity roost within the study area.

CONCLUSIONS AND RECOMMENDATIONS

Suitable roosting habitat that could be used by day-roosting bats, including bat maternity colonies, was observed in trees, rock outcrops, and an abandoned adobe building within the study area. Large numbers of bats consistent with the presence of maternity colonies were observed emerging from the crevices and small caves along the rock outcrops within the portion of Coral Mountain within the study area. Although the presence of roosting bats was not confirmed in any other type of roost feature surveyed in April 2021, it should be noted that not all bat species are fully aggregated in their maternity roost sites in April, when the initial focused bat surveys were conducted. To maximize the probability of detection for any potential maternity roosts on site, the following measure will be implemented:

- Additional maternity-season surveys will be performed in June 2021 to maximize the probability of detection of maternity roosts for all bat species that may occur in the proposed project area and to gather more precise data on numbers and species of bats in any confirmed roosts.

Although no bats were observed emerging from the palm tree near the northern edge of the study area, western yellow bat was acoustically detected within the study area during the April 2021 nighttime surveys, and it is possible that this species may roost within the study area. The palm tree may also be used by a variety of other bat species for roosting (including maternity roosting). Bats were also not observed emerging from any of the palo verde trees with crevices or cavities, but additional surveys will need to be performed in June 2021, to confirm whether or not any of these trees serve as maternity roosts. If the palm tree or any of the palo verde trees identified as having crevice or cavity habitat are removed or trimmed for the project, the following measures are recommended to avoid "take" of adult and juvenile bats:

- Removal of trees (including palm trees) shall occur during the fall months (September or October) to the greatest extent feasible, and will avoid the bat maternity season (March 15–August 31 in the Coachella Valley), which coincides with the bird nesting season, to avoid the potential for "take" of nonvolant (flightless) young. Trees and snags that have been identified as confirmed or potential roost sites require a two-step removal process and the involvement of a bat biologist to ensure that no roosting bats are killed during this activity. This two-step removal shall occur over two consecutive days as follows: on Day 1, branches and limbs not containing cavities, as identified by a qualified bat biologist, will be removed. On Day 2, the remainder of the tree may be removed without supervision by a bat biologist. The disturbance caused by limb or frond removal, followed by an interval of one evening, will allow bats to safely abandon the roost.

If any roosting bats are present during demolition of the abandoned adobe building, those bats would be subject to direct impacts including potential mortality. The following measure is recommended to avoid "take" of bats during removal of the adobe:

- A qualified bat biologist shall confirm the absence of roosting bats prior to removal of the adobe. If bats are found or if the absence of bats cannot be confirmed, the bat biologist will install or directly supervise installation of humane eviction devices and exclusionary material to prevent bats from roosting in the building. Implementation of the humane eviction/exclusions is typically performed in the fall (September or October) preceding construction activity at each structure to avoid impacts to hibernating bats during the winter months or during the maternity season (March 15–August 31 in the Coachella Valley), when nonvolant (flightless) young are present. Any humane eviction/exclusion devices must be installed at least 10 days prior to the demolition of a structure housing bats to allow sufficient time for the bats to vacate the roost(s).

Although no construction will occur at the rock outcrops at Coral Mountain, where occupied bat roosts were identified during the April 2021 surveys, bats roosting in that area could be subject to potential adverse effects from an increase in lighting from the proposed project. Multiple studies indicate that ongoing night lighting, in particular, can be very disruptive to foraging and roosting behaviors. Stone et al. (2009) found that light pollution can negatively impact bats' selection of flight routes by limiting the options for flyways, and can even eliminate bats' abilities to use certain roosts and/or foraging areas. Rydell et al. (2017) and Voigt et al. (2018) note that maintaining darkness at maternity roosts is particularly important because at these types of roosts, aggregations of bats are present consistently over a long period of time, individual bats emerge from predictable locations, and juvenile bats are learning how to fly. Illumination of a maternity roost renders the colony more vulnerable to opportunistic predators such as raptors and owls, and predator-avoidance behaviors such as delayed emergence times reduce their foraging opportunities, thereby lowering juvenile survivorship. The following measure is recommended to reduce potential adverse effects to bats from lighting:

- To avoid permanent impacts to roosting bats from the installation of new light fixtures associated with the proposed development, all lighting fixtures should have light shields or similar devices (e.g., dark sky compliant lighting) installed to minimize light overspill on to Coral Mountain and any open space areas.

In addition to roosting habitat, foraging habitat supporting multiple special-status bat species was identified within the study area. To minimize potential adverse effects to bats from loss of foraging habitat, the following measure is recommended:

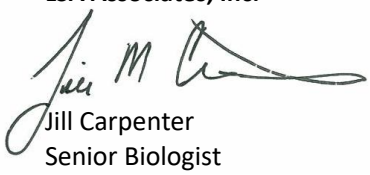
- Existing native vegetation, particularly palo verde trees, will be retained where feasible. Landscaping shall include native desert species.

The above actions will reduce the potential for project-related impacts to bats to the greatest extent feasible.

If you have questions regarding this report or would like to discuss the project further, please contact me at (949) 337-6103.

Sincerely,

LSA Associates, Inc.



Jill Carpenter
Senior Biologist
Bat Specialist

Attachments: A: References
B: Figures: Figure 1: Locations of Suitable Roosting Habitat
Figure 2: Representative Site Photos

ATTACHMENT A

REFERENCES

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ATTACHMENT B

FIGURES

Figure 1: Locations of Suitable Roosting Habitat

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Study Area

Rock Crevice/Cave Roost

Suitable Roosting Habitat Locations

Potential Tree Roost (Eucalyptus Snag)

Potential Tree Roost (Palm Tree)

Potential Tree Roost (Palo Verde)

Potential Tree Roost (Snag)

N

0 375 750

FEET

SOURCE: Nearmap (9/23/2020)

I:\CWV1901\GIS\MXD\Bio\SuitableBatRoostingHab.mxd (5/3/2021)

FIGURE 1

The Wave at Coral Mountain
Focused Bat Surveys

Locations of Suitable Roosting Habitat

Figure 2: Representative Site Photos

Representative view of palo verde trees and snags that provide suitable crevice and/or cavity roosting habitat for bats.

Representative view of foraging habitat between palo verde stands in the western portion of the study area.

Representative view of the crevices and caves along the portion of Coral Mountain that is situated within the study area.

Representative view of crevice habitat suitable for day-roosting bats and maternity colonies at the abandoned adobe.