DOCKETED	
Docket Number:	21-AFC-02
Project Title:	Willow Rock Energy Storage Center
TN #:	248720
Document Title:	Staff's Response to Applicant's Objection to Responses to Data Set 3, Item 148 and 149
Description:	N/A
Filer:	Ngoc Tran
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	2/9/2023 4:32:49 PM
Docketed Date:	2/9/2023

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	
Application for Certification for the	)	Docket No. 21-AFC-2
Willow Rock Energy Storage Center	)	

ENERGY COMMISSION STAFF'S RESPONSE TO APPLICANT'S OBJECTION TO RESPONSES TO DATA SET 3, ITEMS 148 AND 149

California Energy Commission (CEC) staff files this response to applicant's objection to Data Set Request 3 (DR or DR-3) regarding the Crotch's bumblebee (also known as Crotch bumblebee, or CBB). Staff issued DR 3 on December 23, 2022, seeking focused surveys of the CBB (Items 148 and 149) throughout the project footprint. Applicant filed an objection on January 12, 2023, contending the surveys are not relevant, the information is not reasonably available to applicant and is beyond staff's authority to request. (Cal. Code Regs., tit. 20, § 1716.) CEC staff disagrees with applicant's position for the reasons stated below.

I. FACTUAL AND PROCEDURAL BACKGROUND

On December 1 and 2, 2021, Willow Rock (formerly GEM Energy Storage) filed an Application for Certification (AFC), and on July 13, 2022, the Commission adopted the Executive Director's determination that the application was complete, thereby commencing the 12-month timeline within which to reach a decision on the AFC. (Pub. Resources Code, § 25540.6) In accordance with California Code of Regulations, title 20, section 1716, staff issued various requests for data[1], and applicant has provided responses and objections.[2] On August 31, 2022, the California Department of Fish and Wildlife provided the rationale for its conclusion as to the likely presence of CBB at the project location.[3] The docketed report states:

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[1] Data Request set 1 was issued on July 26, 2022; Data request set 2 was issued on October 21, 2022.

[2] Applicant's response to Data set 1, dated August 15, 2022; Applicants Response to Data Set 2 dated November 10, 2022.

[3] TN 245782.

> CBB is a California terrestrial invertebrate of conservation priority, so it should be treated as an endangered, rare, or threatened species consistent with CEQA Guidelines, section 15380 and should be evaluated within the Project area. There are a number of recent observations surrounding the Project area (CAS 2022, Xerces et al. 2022) and the site contains suitable CBB habitat, i.e., areas of grasslands and scrub that contain requisite habitat elements, such as small mammal burrows and bunch/thatched grasses. CBB primarily nest in late February through late October underground in abandoned small mammal burrows but may also nest under perennial bunch grasses or thatched annual grasses, underbrush piles, in old bird nests, and in dead trees or hollow logs. Overwintering sites utilized by CBB mated queens from October to February include soft, disturbed soil, or under leaf litter or other debris.
>
> CBB Habitat Assessment
>
> CDFW recommends a qualified biologist conduct a habitat assessment well in advance of project implementation to determine if the Project area or its immediate vicinity contain habitat suitable to support CBB.

After extensive discussion among the parties, including a public workshop, issues arising from DR-1 and DR-2 were mostly resolved, but follow up questions remain regarding the habitat assessment for CBB. On November 16, 2022, applicant provided a four-page narrative regarding the CBB (TN # 247494) responsive to DR-1. The purported habitat assessment confirmed the presence of numerous plants that are habitat for CBB. It then acknowledged that the volume of such plants is determinative of habitat, but failed to include accurate counts of various foraging plants used by CBB. The report was not written by a qualified biologist who assessed the site in person. Instead, an unspecified individual undertook a "short site visit" to confirm site conditions were not "significantly changed" since the 2021 reports relied upon by biologist, Dr. Yanega in rendering his opinions. None of the documents reviewed by Dr. Yanega contained surveys of CBB flora in the area of concern.

Staff issued DR-3 on December 23, 2022, seeking additional, relevant information relating to the impact of the project on biological resources, specifically CBB, as well as other resources not at issue here. The reasons for the further data requests include the known plant species on the project site and the numerous documented nearby sightings of nests and individuals in the scientific databases. The deficiencies in applicant's November habitat write-up were also explained. (See footnote 10.)

On January 12, 2023, applicant filed a response to DR-3, seeking additional time for some requests, and objecting to DR numbers 148 and 149 relating to CBB survey requests. Applicant states it need not comply with the CBB survey requests because: 1) the information is not relevant, 2) the information requested is not reasonably available to it, and 3) the information is not reasonably necessary to enable CEC to make a determination of the AFC.

As set forth in the attached Declaration of Hillary Sardinas, PhD., dated February 6, 2023, the record establishes the location of the proposed project likely contains CBB. Dr. Sardinas states:

> Given the strong lines of evidence I have outlined above, specifically the existence of a historic CBB record within the project footprint, current CBB records in the project vicinity, the presence of floral resources known to be utilized by CBB in the project site, and the lack of focused surveys conducted within the project site, including for nesting habitat, it is my professional expert opinion as a biologist that there is strong potential for CBB to occur within the project footprint. This potential warrants focused surveys for CBB in and around the proposed project location, unless the applicant opts to presume the presence of CBB onsite." (See Para. 16, Declaration of Dr. Sardinas.)

Staff does not agree with the bases of the objection filed by applicant, as explained herein. Based on the scientific evidence, staff will assume presence of CBB and will develop appropriate mitigation as part of the Biological Resources Conditions of Certification.

II. DATA REQUESTS 148 AND 149 WERE PROPERLY PROPOUNDED AND SERVED, AND APPLICANT'S OBJECTIONS LACK MERIT

This timely response[4] is provided to the committee to ensure the record is clear that the Data Requests were properly issued, seek relevant information, which is reasonably available to applicant and does not require research and analysis, and is reasonably necessary, though not essential, to permit the Commission to determine the impacts of the project.

[4] A party may petition the committee to order a party to supply information within 30 days of being informed in writing by the responding party that such information will not be provided. The committee may set a hearing to consider argument on the petition, and shall rule on the petition, in whole or in part, within 30 days after receipt of the petition. (Cal. Code Regs., tit. 20, § 1716, subd. (g).)

A. CBB Surveys are Relevant to the Issue of Whether the Project will have any significant environmental impacts.

The Warren-Alquist Act requires the Commission to render findings setting forth "specific provisions relating to the manner in which the proposed facility is to be designed, sited and operated in order to protect environmental quality and assure public health and safety." (Pub. Resources Code, § 25523.) As a certified regulatory program under CEQA[5], the commission's environmental document, upon which it relies to establish compliance with the Warren-Alquist Act, must include either alternatives and mitigation of any substantial environmental impacts, or a statement that the project would not have any significant or potentially significant effects on the environment. To conclude the project will not have any significant impacts on the environment, the statement must be supported by documentation to show the possible effects that the agency examined in reaching its conclusion.[6]

Documentation that is relevant to the determination of impacts on the environment is necessary to support the required finding. "Relevant evidence means evidence, … having any tendency in reason to prove or disprove any disputed fact that is of consequence to the determination of the action." (Evid. Code, §210.) The Commission is mandated to determine the environmental factors impacted by the project, including a description of the "potential significant environmental effects." (Cal. Code Regs., tit. 20, § 1745.5(b)(1)(a).) The phrase "significant effects on the environment" is defined by regulation as "a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." (Cal. Code Regs., tit. 20, § 15002.) Since the law requires staff to document any possible effect on the environment stemming from the project, and the project will disturb the habitat of any species present on the site, staff must ascertain the existence of such species.

The application materials provided staff with information regarding a possible effect on the environment, specifically disturbance of habitat suitable for CBB in the course of development of the large facility on the 71-acre parcel, as well as throughout the linears and buffer zones. In its habitat write-up (Attachment DR 48-1, TN#247494, pp. 51-58) applicant sets forth its assessment methodology, which excluded any valid surveying of the site for suitable plant forage or nesting sites. [7] With limited information being provided to

[5] Pub. Res. Code sec. 21080.5; Cal. Code Regs, tit. 14, sec 15251.

[6] Cal. Code Regs., tit. 14, sec. 15252.

[7] "This habitat assessment began with a detailed literature review to identify existing documents that describe the key constituent habitat components for this species, a review of existing biological resources documents for the project site, a review of

its consulting biologist, Dr. Yanega, the report describes the following facts: the project site is in the known range of the species (p. 2); confirmed species are known to inhabit an area 11 miles away from the project site, thus providing a low to moderate probability of occurrence at the site (p.4); in the opinion of the retained biologist, the (unverified) population of flowering plants are inadequate to support a population of the species, which reduces the potential to occur to a level of "not likely" to occur (p. 4). This conclusion by Dr. Yanega is based on a map of the area and "a description of the existing vegetation communities." Upon closer inspection of the write-up, it is clear that no qualified biologist surveyed the amount of suitable vegetation communities on the site for CBB, and no reviewed literature described the amount of current suitable vegetation communities. It is speculation that there are not enough plants to support a single bumble bee on the site. Because the write-up is an inadequate habitat assessment due to it being incomplete and not scientifically reliable, it does not conclude the question of CCB presence on the project site. Therefore, the requested surveys are relevant as they will provide information that is of consequence to the determination of whether the project impact on the environment is significant or not, with or without mitigation, which is a required finding for this proceeding.

B. <u>CBB Survey requests were properly issued because they requested information reasonably available to applicant and were accompanied by reasons for the requests</u>.

The information requested in DRs 148 and 149, to be provided through a qualified, documented survey, is reasonably available to applicant and does not call for improper research and analysis. Staff may request information that is "reasonably available to the applicant which is relevant to the proceedings, or reasonably necessary to make a decision on the application. All such requests shall include the reasons for the requests."[8] Data Requests 148 and 149 request the following:

> 148. Please conduct at least 3 days of surveys for Crotch bumble bee. In general, the protocol will require the following criteria for the surveys:
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> • survey during peak nectar plant blooming period (~March 1 through June 30)
> • survey between 8 am and 4 pm
> • survey when temperatures are between 65-90 degrees Fahrenheit
> • survey on sunny days with wind less than 8 mph
> • minimum 1 person hour of active search time per 3 acres of suitable

known recorded occurrences, a brief site visit, and a discussion with a known expert for this species (Dr. Doug Yanega, UC Riverside)." Attachment DR 48-1, TN#247494 p.51.

[8] Cal. Code Regs., tit. 20, sec. 1716(b).

habitat (this time can be split between multiple surveyors, but the "clock" must be stopped when not actively surveying)
• interval between survey days should be at least 3 weeks

149. Prepare a written report for staff and agency review and comment. At a minimum, please include:

• surveyor(s) qualifications/resumes
• dates and times of surveys
• weather conditions
• photo log of suitable habitat and nectar plants
• photos of bumble bees for identification.

The information sought is a survey of CBB: a verified and reliable count of the number of individuals of the species present or potentially present in the project area. The state of the fauna on the property over which applicant has control is reasonably available to applicant. In sum, applicant must go look at the information, and count and document what it sees on its property in order to provide the information in a scientifically reliable format regarding a species that inhabits the type of habitat existing within the project disturbance area.

Applicant's objection resists the DRs for CBB surveys stating "such information is not reasonably available to the applicant and requires that the applicant perform research and analysis on behalf of the requesting party." Surveys are not research or analysis, they are scientifically reliable counts and descriptions of signs of the species. Moreover, to date in these proceedings, applicant has provided or agreed to provide focused surveys of various species with habitat in the project area.[9]

Finally, the data request was properly issued because it was accompanied by reasons supporting the requests. DRs 148 and 149 were accompanied by a clear explanation as to why the surveys of CBB are reasonably necessary.[10]

[9] See e.g. Joint Statement of Workshop Outcome, TN 248367 Desert Tortoise, p. 5; Rare plants survey, p. 5.

[10] The CBB use a variety of habitats including open grasslands, shrublands, chaparral, desert margins including Joshua tree and creosote scrub, and semi-urban settings. The CBB are also generalists and use a wide array of plant species as nectar sources. The project site contains plant species that are known to be used as nectar sources by CBB. This species can forage up to 6.2 miles from their nest sites to use nectar food sources. It may be possible that the CBB may not nest on the project site, but it is clear that foraging habitat is present. The site does not have to sustain a nest colony of CBB or contain all the forage species (nectar sources) that would maintain a nest colony on site

In sum, staff disagrees with applicant's objections regarding DRs 148 and 149. The requests fully complied with California Code of Regulations, title 20, section 1716.

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to be considered suitable habitat and be used by the species for foraging.
Surveys conducted and provided in the application for certification (AFC) filing by the applicant did not focus on the CBB nor did any of the surveyors have the appropriate qualifications to survey the CBB. The information provided in the habitat assessment does not include surveys and therefore the information provided is not an indicator of the current year's occupancy of the CBB. The CBB Queens move nesting locations every year and the species has been increasing its range in recent years.
There are documented sightings nearby in the city of Lancaster from 2020 as well as several in Phacelia Preserve, in addition to the recorded occurrence the applicant provided in the habitat assessment for Antelope Valley Poppy Preserve State Natural Reserve. These two other iNaturalist occurrences have been verified by Dr. John Ascher and Dr. Leif Richardson, both preeminent bumble bee experts.
The habitat assessment did not inventory or survey for any suitable nesting site substrates to determine if a colony is present. Documentation of all small mammal burrows, perennial bunch grasses, thatched annual grasses, brush piles, old bird nests, dead trees, and hollow logs which could be used as nest sites, is needed to determine possible nest locations. Conducting surveys for other species cannot be used to replace protocol surveys for the CBB.
As shown in California Natural Diversity Database (CNDDB) and iNaturalist, the species occurs in or near the city of Tehachapi (north), communities of Mojave (northeasterly), Gorman (west), Three Points (south), and Edwards Air Force Base (east) that surround the project site. Therefore, there is potential this species could utilize the plants in the project area for forage even if the site is not suitable for a nest.
Without conducting surveys, it is hard to definitively say the site is unoccupied. The habitat assessment states there is some low to moderate suitable habitat, which means there is suitable habitat in the project area.
Even though there are no recorded occurrences in the project area, this lack of data does not mean the species does not occur there. It could be the site was never surveyed for the CBB. The occurrence sightings only provide positive data of where the species was found. Data is not kept regarding where surveys were conducted with negative findings. Staff reiterates that the CNDDB and iNaturalist are positive occurrence databases only and may not be used to document absence of occurrence.

III. BASED ON THE ATTACHED DECLARATION OF QUALIFIED EXPERT BIOLOGIST HILLARY SARDINAS, PhD., STAFF WILL ASSUME PRESENCE OF CBB IN THE ABSENCE OF VALID, FOCUSED SURVEYS

Although focused surveys were properly requested, if the applicant continues to decline to perform the surveys, staff will assume presence of the species throughout the site and will develop appropriate mitigation as part of the Biological Resources Conditions of Certification. The attached Declaration of qualified expert Hillary Sardinas, PhD., provides substantial evidence to support staff's conclusion in this regard. Dr. Sardinas's testimony clarifies the optimal time for surveys of CBB is March 1 through June 30. (See Attachment A.) Other instructions on accurate survey procedures are available from CDFW. If applicant wishes to obtain and provide staff with valid evidence that could potentially provide substantial evidence that the impact of the project is less than significant, it can conduct surveys this spring and provide staff with those results.

On Behalf of California Energy Commission Staff

Dated: 02/09/2023

Kari Anderson

Kari Anderson

Senior Staff Counsel

California Energy Commission

ATTACHMENT A

STATE OF CALIFORNIA

ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

DOCKET: 21-AFC-02; WILLOW ROCK ENERGY STORAGE CENTER

DECLARATION OF DR. HILLARY SARDIÑAS, PHD, IN SUPPORT OF DATA REQUESTS 148 AND 149 REGARDING CROTCH'S BUMBLE BEE, CONTAINED IN WILLOW ROCK DATA REQUESTS SET 3 (TN 248218, Docketed 12/23/2022)

I, Dr. Hillary Sardiñas, PhD, declare as follows:

1. I am employed by the California Department of Fish and Wildlife (CDFW) in the official capacity of Senior Environmental Scientist (Specialist). I am the Pollinator Coordinator for the Wildlife Diversity Program. I have been employed by CDFW in this capacity since January 4, 2021. I am also the Principal Investigator for the California Bumble Bee Atlas, a collaborative community science project between CDFW and the Xerces Society for Invertebrate Conservation that gathers data on bumble bee occurrences across California.

2. I hold a PhD in Environmental Science, Policy, and Management from the University of California, Berkeley, where I researched bee nesting and resource use under Dr. Claire Kremen. I have taken college-level courses in entomology and insect behavior, as well as the Bee Course, which is a weeklong workshop regarding the identification, ecology, and biology of wild bees taught by taxonomists from museums and research universities across the United States and sponsored by the American Museum of Natural History and Cornell University.

3. I have gone through extensive training and have conducted bumble bee surveys throughout the state. I regularly train community scientists in non-lethal bumble bee survey protocol and lead workshops on bumble bees for biologists and the public.

4. I submit this Declaration in support of data requests 148 and 149, regarding the Crotch's bumble bee (*Bombus crotchii*; also referred to as the Crotch bumble bee; hereafter CBB). These data requests are contained in the third set of data requests filed in the above-referenced docket (TN 248218, Docketed 12/23/2022).

5. I have personal knowledge of the facts set forth herein, and, if called upon, could and would competently testify thereto. I have reviewed data requests 148 and 149, as well as the Crotch's Bumble Bee Habitat Assessment for the Willow Rock Energy Center Project (21-AFC-02), Applicant's Notice Pursuant to 20 C.C.R. § 1716(f) for CEC Staff's Data Requests Set 3, Gem Energy Storage Center Project Figures ADA, and the WRESC Plant Species List from the above-referenced docket. In rendering the professional opinions set forth in this Declaration, I have also relied on relevant peer-reviewed literature, as is the customary practice in my field. Citations to this literature are provided in ***Exhibit A***, attached hereto. In

addition, I consulted species distribution models for the Crotch's bumble bee, which are provided in ***Exhibits B*** and ***C***.

6. CBB is currently a candidate species for purposes of the California Endangered Species Act (CESA), as defined by Fish and Game Code section 2068. As such, CBB is afforded the same protections as a listed threatened or endangered species and the "take" of CBB is prohibited by law (Fish & G. Code, § 2085). It is therefore important to determine whether CBB are present at the proposed project location.

7. When CDFW scientists determine there is evidence a CESA candidate, threatened, or endangered species may be present in a project area, CDFW typically requires project proponents to conduct focused surveys to ascertain the presence or absence of the species, whether incidental take coverage is required, and to inform potential impact avoidance, minimization, and mitigation measures.

8. It is common practice for project proponents to voluntarily presume the presence of candidate, threatened, or endangered species, in which case focused species surveys are not required by CDFW, but avoidance, minimization, and/or mitigation measures are applied, and incidental take authorization may be required.

9. The applicant has indicated it does not plan to presume the presence of CBB at the project location, nor does it intend to conduct focused CBB surveys within the proposed project site. Rather, it has concluded there is no suitable CBB habitat on site and it therefore seeks to assume the absence of CBB without conducting focused CBB surveys.

10. The applicant has not conducted any focused surveys for CBB within or around the proposed project footprint.

    a. In 2021, the applicant's biologists noted a lack of bumble bee activity while conducting transect surveys in and around the proposed project site for other species, including desert tortoise. The applicant's records indicate these surveyors were surveying approximately 29.3 km (18.2 miles) per day. This does not constitute an adequate replacement for focused CBB surveys.
    b. Focused surveys for CBB should be conducted in and surrounding the project site by a qualified biologist and focus on floral resources and nesting habitat likely to be used by CBB during the peak bloom period, when CBB detection is most probable. These surveys should be repeated at regular intervals during this period.
    c. Bumble bee surveys cannot feasibly be conducted at a rate of 29.3 km (18.2 mi) per day. For example, the United States Fish and Wildlife Service's Rusty Patched bumble bee survey protocol requires a minimum of 1 person hour per three acres of habitat, or that the surveys continue until at least 150 bumble bees are captured, whichever comes first (USFWS 2019, pg. 13).

d. CDFW would only consider a focused CBB survey valid for a single season/ generation (i.e., through March 1 of the following year) because CBB colonies move nesting locations each year as new queens disperse.

11. The proposed project site is located within historically suitable habitat for CBB.

a. I reviewed two species distribution models (SDM) developed by Dr. Richardson, a bumble bee specialist who is a co-author of Bumble Bees of North America: An Identification Guide (Williams et al. 2014), curator of the Bumble Bees of North America Occurrence Record Database (BBNA; Richardson 2022), and a Conservation Biologist with the Xerces Society for Invertebrate Conservation where he leads the California Bumble Bee Atlas. The proposed project site falls within moderately suitable habitat for the historic SDM of CBB (1892-1992; see ***Exhibit B***). However, the degree of suitability is higher in the modeled current species distribution for CBB (2001-2020), with some of the project footprint falling in the highest suitability category (see ***Exhibit C***).

b. The proposed project site is located in the ecoregion designated by the United States Forest Service as High Desert Plains and Hills (Cleland et al. 2007). Ecoregions are designated based on shared environmental similarities such as climate, geology, and soil; there can be many types of habitats within an ecoregion and some of those habitats can share key characteristics. There are over 100 CBB sightings – both historic and current – that have occurred elsewhere within the High Desert Plants and Hills ecoregion (see ***Exhibit D***.) This indicates there are many portions of this ecoregion that are suitable for CBB, which could include the project area.

12. There is a historic record of CBB from within the project footprint and numerous historic and current records within 30 km (18.64 mi) of the proposed project site.

a. Data from the BBNA (Richardson 2022), the most extensive database of bumble bee records in North America, show that CBB was reported directly within the proposed project area in 1974 (see ***Exhibit F***). The location description for this occurrence is noted as "Willow Springs," (lat, long: 34.878, -118.297).

b. There have been documented historic (1904-1980) sightings of CBB individuals in every direction from the proposed project site (see ***Exhibit F***).

c. There are also recent (2017-2022) verified sightings of CBB within 20 km (12.42 mi) and 30 km of the proposed project area, again in all directions (see ***Exhibit F***). These records include: (i) sightings documented in the California Natural Diversity Database; (ii) sightings reported and verified through Bumble Bee Watch; and (iii) sightings reported by members of the public through iNaturalist that were later verified by Dr. John Asher, a preeminent bee taxonomist.

d. CBB records both from focused surveys and incidental sightings have increased throughout its range since 2017 (see ***Exhibit E***), including in portions of its range where it had previously declined.

13. Despite the lack of CBB sightings within 10 km (6.21 mi) of the site in the past 48 years, CBB individuals may currently be present within the proposed project site. Without surveys, current occupancy cannot be determined.

    a. The absence of current data is not equivalent to the absence of a species. Without conducting focused surveys, the lack of CBB sightings within a particular location or in close proximity to a given location is insufficient to indicate the absence of CBB within the location.

    b. For example, in 2022, I surveyed an area I believed to have appropriate habitat to support CBB. To my knowledge, the area had never before been surveyed for CBB. It was more than 27.4 km (17 mi) from the nearest historic sighting (recorded in 1951) and 32.1 km (20 mi) from the nearest current sighting (recorded in 2021). I found CBB in that location foraging on the limited floral resources still available (gumplant, *Grindelia* sp.) at the time of year I surveyed (May).

14. There may be active CBB nests or habitat features that could support CBB nests within the proposed project site.

    a. CBB are thought to nest underground (Williams et al. 2014).

    b. The applicant has not inventoried potential nesting habitat at the proposed project site.

    c. The applicant's habitat assessment claims the on-site flowering resources are too sparse to support a CBB nest, but the concentration of floral resources at a given site may not be indicative of the potential value of those resources to the success of a CBB nest, nor does it necessarily influence nest occurrence within the site or surrounding landscape, as nest selection decisions by new queens are poorly understood (Liczner and Colla 2019). As a result, without additional surveys, the purported sparseness of floral resources on-site is insufficient to conclude there is not a CBB nest or suitable nesting habitat on-site.

15. Even if there are no active or potential CBB nests within the proposed project site, CBB individuals may utilize the site for essential, non-nesting activities, such as foraging.

    a. The applicant's habitat assessment indicates the project site supports several flowering plant genera, including but not limited to *Amsinkia* (Fiddleneck), *Eriogonum* (Buckwheat), *Salvia* (Sage), that CBB is known to forage upon.

    b. Bumble bees have been recorded foraging between 1.5 to 4 km (0.93 to 2.48 mi) from their nesting location (Osborne et al. 2007), though their predicted foraging range varies depending on their size and can be up to 7.9 km (4.9 mi; Greenleaf et al. 2007). This is in contrast to dispersal distance— how far a new queen can move from her natal colony to her overwintering site, and then to the site of the new colony she establishes the following spring— which can be up to 10 km (6.21 mi) based on genetic data (e.g., Kraus et al. 2009; Jha and Kremen 2013a).

c. Nest proximity to floral resources has not been shown to necessarily increase bumble bee use of those resources, with bumble bees appearing to prefer floral resources more than 100 m from their nest (Dramstad et al. 2003). In fact, "landscape context, not patch size," has been shown to be a better determinant of bumble bee density (Heard et al. 2007). Furthermore, bumble bees have been shown to exhibit plastic responses to floral resources, meaning they are able to respond as floristic resource distribution changes across the landscape (Jha and Kremen 2013b).

d. The habitat assessment characterizes the on-site flowering resources as "sparse," but lacks objective quantification necessary to independently assess the potential value of those resources to CBB, such as the total cover, plant density, and distribution of plant species/floral resources within the project footprint.

e. In any event, bumble bees are able to utilize fragmented patches of floral resources at the landscape scale (Persson and Smith 2011; Williams et al. 2012). While bumble bee nest density has been correlated to floral resource availability (e.g., Knight et al. 2009), scarcity of resources at a given location has not been tied to nest presence within the surrounding landscape. Therefore, without additional surveys, the purported sparseness of floral resources on-site is an insufficient basis to support the conclusion that CBB do not and cannot rely on the available on-site floral resources for essential non-nesting activities, such as foraging.

16. Given the strong lines of evidence I have outlined above, specifically the existence of a historic CBB record within the project footprint, current CBB records in the project vicinity, the presence of floral resources known to be utilized by CBB in the project site, and the lack of focused surveys conducted within the project site, including for nesting habitat, it is my professional expert opinion as a biologist that there is strong potential for CBB to occur within the project footprint. This potential warrants focused surveys for CBB in and around the proposed project location, unless the applicant opts to presume the presence of CBB on-site.

17. If the applicant declines to presume the presence of CBB within the project site, in my professional expert opinion, the applicant must conduct a minimum of 3 survey days for CBB within the project site during the peak blooming period between March 1 and June 30 prior to the certification and commencement of project activities, and again for each year of project activity. CDFW has provided additional survey parameters, such as the appropriate time of day to conduct surveys and how to space out surveys, in other documents pertaining to this project. If the applicant needs a survey protocol to reference, as it claims to be unaware of existing survey protocols for bumble bees, I recommend it review the United States Fish and Wildlife Service's Rusty Patched Bumble Bee protocol (USFWS 2019). In addition, the California Bumble Bee Atlas volunteer handbook (CABBA 2022) outlines appropriate non-lethal survey methodology (see ***Exhibit A***).

By my signature below, I certify that the facts, conclusions and opinions contained in this Declaration are true and correct to the best of my knowledge, and are the type of facts and evidence I regularly rely on in rendering my expert opinion as a professional biologist. I make this statement under penalty of perjury under the laws of the State of California.

Dated: 2/6/2023

By: DocuSigned by: Hillary Sardinas BD53819A59DB44B...

Dr. Hillary Sardiñas, PhD
Senior Environmental Scientist (Specialist)

At: Albany, California

Exhibit A

Citations to Peer-Reviewed Literature

1. California Bumble Bee Atlas (CABBA). 2022. Participant Handbook. https://www.cabumblebeeatlas.org/uploads/1/1/6/9/116937560/cabba_participant_handbook_03_15_2022.pdf
2. Cleland, DT, JA Freeouf, JE Keys, GJ Nowacki, CA Carpenter, and WH McNab. 2007. Ecological Subregions: Sections and Subsections for the conterminous United States. Gen. Tech. Report WO-76D [Map on CD-ROM] (Sloan, AM, cartographer). Washington, DC: U.S. Department of Agriculture, Forest Service, presentation scale 1:3,500,000; colored.
3. Dramstad, WE, GLA Fry, and MJ Schaffer. 2003. Bumblebee foraging— is closer really better? Agriculture, Ecosystems, and Environment, 95: 349-357.
4. Greenleaf, SS, NM Williams, R Winfree, and C Kremen. 2007. Bee foraging ranges and their relationship to body size. *Oecologia*, 153: 589-596.
5. Heard, MS, C Carvell, NL Carreck, P Rothery, JL Osbourne, and AFG Bourke. 2007. Landscape context not patch size determines bumble-bee density on flower mixtures sown for agri-environmental schemes. Biology Letters, 3: 638-641.
6. Jha, S, and C Kremen. 2013a. 2013. Urban land use limits regional bumble bee gene flow. *Molecular Ecology*, 22(9): 2483-2495.
7. Jha, S, and C Kremen. 2013b. Resource diversity and landscape-level homogeneity drive native bee foraging. Proceedings of the National Academy of Sciences, *110*(2): 555-558.
8. Knight, ME, JL Osborne, RA Sanderson, RJ Hale, AP Martin, and D Goulson. 2009 Bumblebee nest density and the scale of available forage in arable landscapes. Insect Conservation and Diversity, 2: 116–124.
9. Kraus, FB, S Wolf, and RFA Moritz. 2009. Male flight distance and population substructure in the bumblebee *Bombus terrestris*. *Journal of Animal Ecology,* 78: 247-252.
10. Liczner, AR, and SR Colla. 2019. A systematic review of nesting and overwintering habitat of bumble bee globally. Journal of Insect Conservation, 25(5-6): 787-801.
11. Osbourne, JL, AP Martin, NL Carreck, JL Swain, ME Knight, D Goulson, RJ Hale, and RA Sanderson. 2008. Bumble bee flight distances in relation to the forage landscape. Journal of Animal Ecology, 77: 406-415.
12. Persson, AS and HG Smith. 2011. Bumblebee colonies produce larger foragers in complex landscapes. Basic and Applied Ecology, 12(8): 695-702.
13. Richardson, LL. 2022. Bumble bees of North America occurrence records database. *https://www.leifrichardson.org/bbna.html*. Data accessed 12-07-2022.
14. U.S. Fish and Wildlife Service (USFWS). 2019. Survey Protocols for the Rusty Patched Bumble Bee (*Bombus affinis*). Version 2.2. Accessed 01/26/2022: https://docslib.org/doc/7510154/survey-protocols-for-the-rusty-patched-bumble-bee-

bombus-affinis-version-2-2-april-1-2019#:~:text=Survey%20Protocols%20for%20the%20Rusty%20Patched%20Bumble%20Bee,extant%2C%20see%20definitions%20below%20and%20online%20at%20https%3A%2F%2Fwww.fws.gov%2Fmidwest%2FEndangered%2Finsects%2Frpbb%2Frpbbmap.html%29.

15. Williams, NM, J Regetz, and C Kremen. 2012. Landscape-scale resources promote colony growth but not reproductive performance of bumble bees. Ecology, *93*(5): 1049-1058.
16. Williams, PH, RW Thorp, LL Richardson, and SR Colla. 2014. Bumble bees of north America. In *Bumble Bees of North America*. Princeton University Press.

Exhibit B

Species Distribution Model Developed by Dr. Leif Richardson from Historic (before 1992) CBB Records (higher suitability is indicated by green colors, lower by orange and yellow)

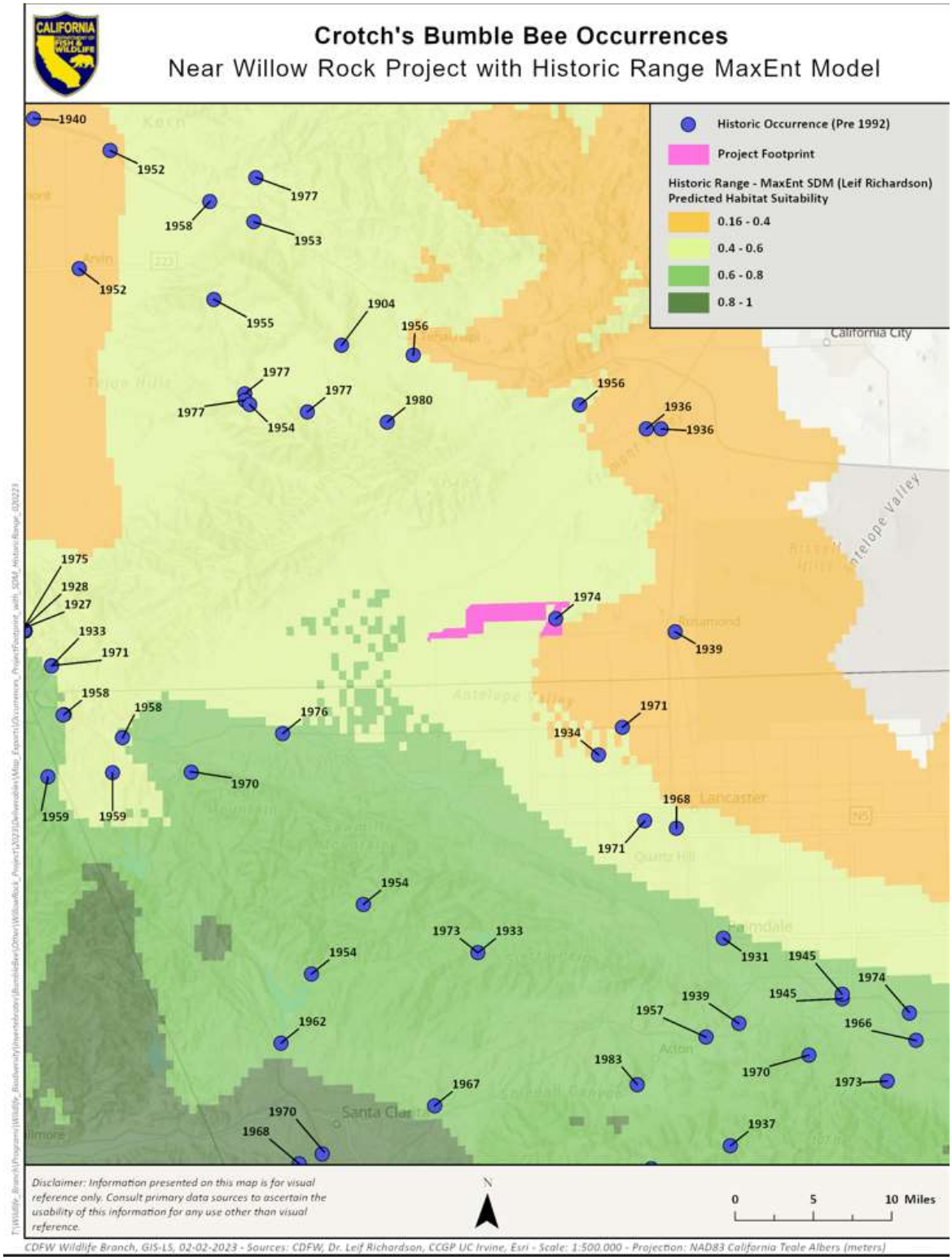

Exhibit C

Species Distribution Model Developed by Dr. Leif Richardson from Recent (2001-2020) CBB Records (higher suitability is indicated by green colors, lower by orange and yellow)

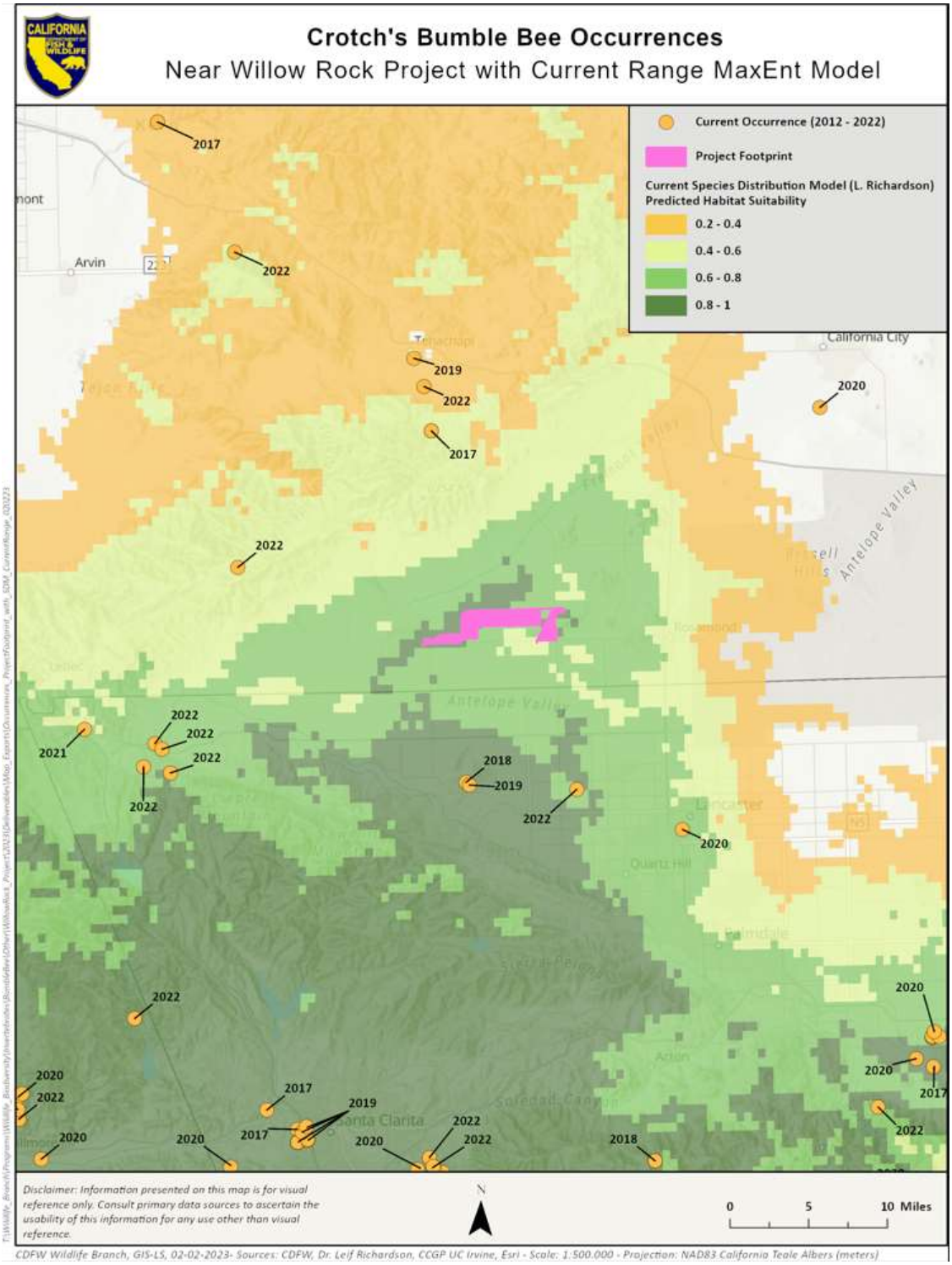

Exhibit D

CBB Records in the Project Vicinity in the Same
USDA Forest Service Ecoregion– High Desert Plains and Hills

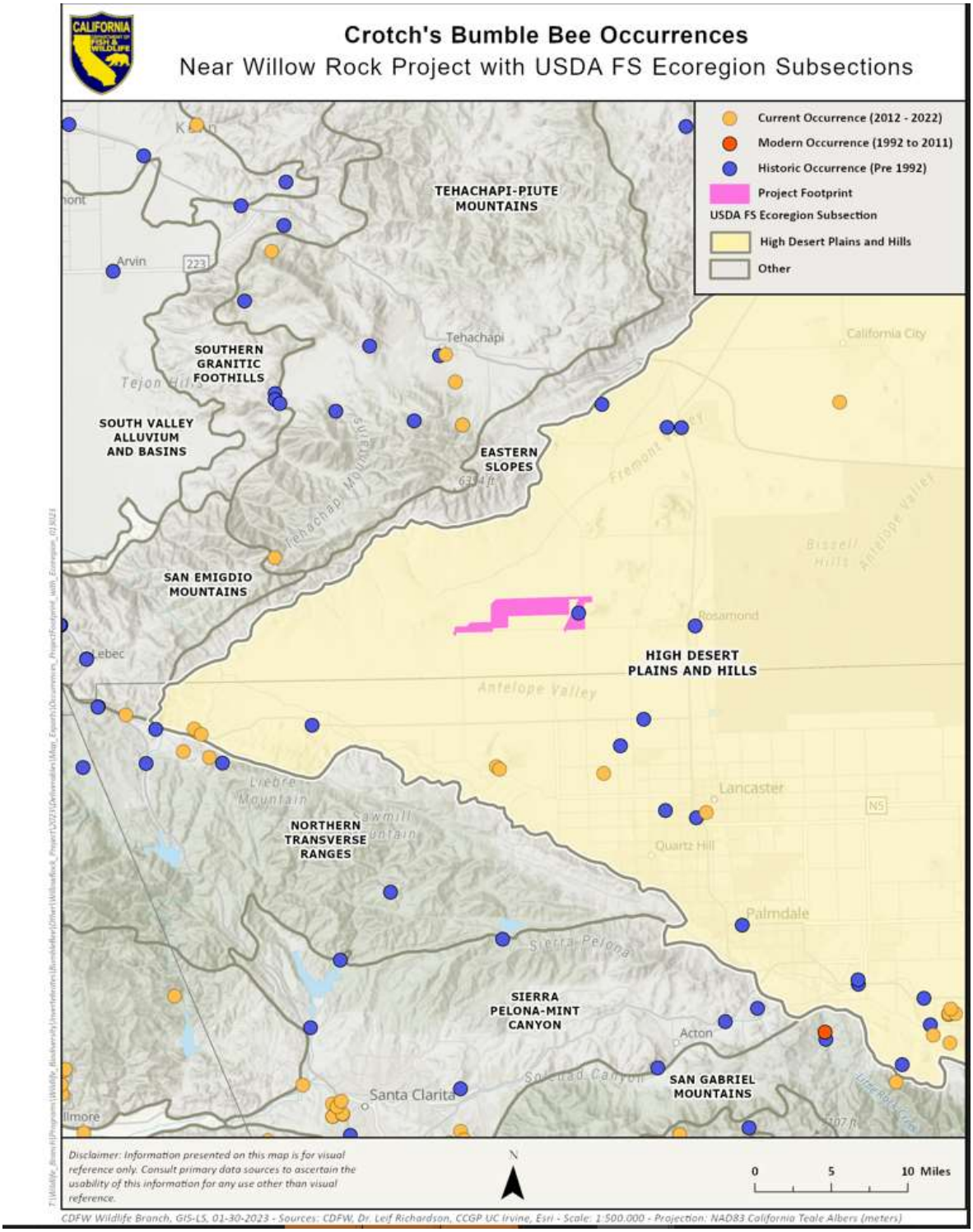

Exhibit E

Histogram of all CBB Records in California from the
BBNA Dataset for Which a Year Was Recorded (1892-2022)

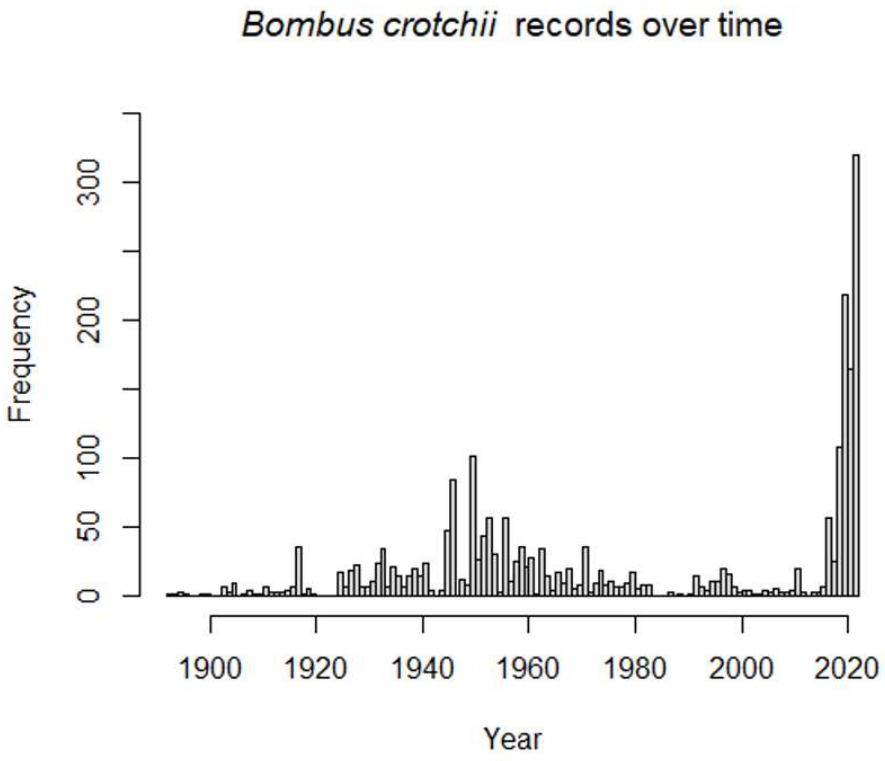

Exhibit F

Map of Current (orange) and Historic (dark blue) Records of CBB in the Project Area (pink) and Within 10, 20, and 30 Kilometers of the Project Area (light blue gradients).