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STATE OF CALIFORNIA
State Energy Resources
Conservation and Development Commission

In the Matter of:)	Docket No. 15-AFC-01
)	
APPLICATION FOR CERTIFICATION)	**INTERVENORS' SIERRA CLUB**
OF THE PUENTE POWER PROJECT)	**LOS PADRES CHAPTER,**
	ENVIRONMENTAL COALITION
	OF VENTURA COUNTY AND
	ENVIRONMENTAL DEFENSE
	CENTER

Exhibit No.4038

Supplemental Testimony of Lawrence E. Hunt

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DECLARATION OF
Lawrence E. Hunt

I, **Lawrence E. Hunt**, declare as follows:

1. I am a consulting wildlife biologist with over 30 years of field experience in central and southern California. I hold advanced degrees in vertebrate zoology and evolutionary ecology, with an emphasis in herpetology and have conducted extensive field work in the coastal dune systems between the Ventura River and Port Hueneme during research and consulting activities.

2. A copy of my professional qualifications and experience was previously attached to my prior testimony in Exhibit 4017and incorporated by reference.

3. I prepared the Supplemental Testimony of Lawrence E. Hunt submitted by intervenors the Los Padres Chapter of the Sierra Club, the Environmental Coalition of Ventura County, and the Environmental Defense Center. The basis for my testimony is set forth in the testimony itself and is incorporated by reference.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and, if called as a witness, could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 14 July 14, 2017__ Signed: Lawrence E Hunt

At: Santa Barbara, California

Supplemental Testimony of Lawrence E. Hunt

RE Supplemental Biological Resources Evidence

Puente Power Project, Oxnard, California

July 14, 2017

I, Lawrence Hunt, submit the following testimony in the above-captioned proceedings. My testimony reviews and provides evidence regarding the Applicant's (also referred to as "NRG") supplemental biological resources field surveys submitted by the declarations of the Applicant's biologists Julie Love and Ivan Parr on June 23, 2017, in response to the March 10, 2017 "Committee Orders for Additional Evidence and Briefing Following Evidentiary Hearings." (AECOM, 2017b; TN 219898)

The surveys were conducted by AECOM in April-June 2017 for the Puente Power Project and the results were compiled in the Biological Resources Survey Report ("Survey Report" or "Report"). (AECOM, 2017b). My testimony also analyzes the new information and evidence regarding biological resources survey results and how it impacts the recommendations of the California Coastal Commission's ("CCC") 30413(d) Report and the California Energy Commission's ("CEC") revised Conditions of Certification (CEC, 2017b; CCC, 2016).

DOCUMENTS REVIEWED. I reviewed the following documents in preparing this testimony, in addition to other references and sources in the Literature Cited section, and the literature and resources cited to in my Opening Testimony and Rebuttal Testimony docketed in January 2017. (Exhibit Nos. 4017 and 4027) My qualifications and Curriculum Vitae are attached to my prior testimony (Exhibits 4017 and 4027) and incorporated herein.

- Final Biological Resources Survey Methodology (AECOM, 2017a);
- Biological Resources Survey Report (AECOM, 2017b; TN216937);
- CCC 30413(d) Report - Final Approved Report (CCC, 2016; TN213667);
- CCC Comments on Biological Survey Methodology (CCC, 2017; TN216908);
- CDFW Comments on Biological Survey Methodology (CA Dept. of Fish and Wildlife ("CDFW"), 2017; TN216901);
- Final Staff Assessment (CEC, 2016; TN 214712);
- Puente Power Plant Application for Certification (NRG, 2015);
- Applicant Comments on Conditions of Certification (NRG, 2017);
- Staff Responses to Applicant's Comments on Conditions of Certification (CEC, 2017);

- USFWS Biological Survey Protocols for Least Bell's Vireo (Attachment E, hereinafter cited as "USFWS, 2001");
- CDFW Western Burrowing Owl (Attachment D; hereinafter cited to as "CDFW, 2012");
- Environmental Defense Center ("EDC"), Declaration of Brian Trautwein, May 12, 2017, (EDC, 2017;TN 217571)
- CA Natural Diversity Data Base report of CA legless lizard observations (Attachment C, hereinafter cited to as "CNDBB, 2017");
- Hunt, Puente Power Project Testimony and Comments on Draft Survey Methodology (Hunt, 2017b; TN 216914);
- McGrath Lake Habitat Restoration Monitoring Reports (Arcadis, 2015 (Attachment B; Arcadis, 2016 (Attachment I);
- Final Rule for Critical Habitat for the Ventura Marsh milk-vetch (USFWS, 2004).

I. SURVEY METHODOLOGY

On April 7, 2017, I provided comments on the Applicant's proposed survey methodology. (Hunt, 2017 b; TN 216914). The CCC and CDFW also submitted comments on the Applicant's proposed survey methodology (CCC, 2017; CDFW, 2017a). The Applicant filed its Final Survey Methodology on April 10th, and also provided brief responses to the comments. (TN 216937)

A. The Biological Study Area ("BSA") Did Not Include the Entire Project Site, and the Full 100-Foot Buffer Area.

The BSA, as defined the Survey Report on page 1-3 and represented in Figure 1, did not include the entire Project site, or the entire 100 foot buffer area. (AECOM, 2017b) This is a serious flaw in the survey methodology that affects the accuracy of the results for several of the target species – particularly the California Legless lizard. AECOM biologists surveyed the buffer on the north side of the Project area only as far as the property line fence (AECOM, 2017b, p. 1-3). Consequently, their survey area on the north side extended only 70-80 feet from the 3.26-acre portion of the Project site, instead of encompassing the full 100-foot buffer from the entire Project site boundary.

In addition, the BSA excluded the majority of the Demolition Access Road (also part of the Project site) (AECOM, 2017b, at Figure 1.) As a result, the surveys most likely overlooked special-status wildlife species such as the California legless lizard. The BSA also failed to include any buffer around the outfall and therefore the surveys may have failed to document special-status species that could be impacted by removal of the outfall. Coastal dunes and other habitats in the 100-foot buffer north of the Project area support a number of the target species, including critical habitat for the Ventura marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*) and known occurrences of the globose dune beetle (*Coelus globosus*), and California legless lizard (genus *Anniella* (USFWS, 2004; NRG, 2015 (Fig. 4.2-3, Sheet 3); Attachment B, hereinafter cited as "Arcadis 2015"; Attachment I, hereinafter cited as "Arcadis, 2016"; CNDDB, 2017). In addition, the two-striped garter snake (*Thamnophis hammondii*) has been identified near the northern buffer. (Hunt, 2017a) The buffer should have extended to the 100-foot limit in order to fully assess Project-related impacts to these and other special-status species both on and off the MGS property, per the Coastal Commission's recommendations in

the 30413(d) Report and the comments on the Applicant's proposed Survey Methodology. This was explicitly directed by the Coastal Commission (CCC, 2017):

> "The biological survey area ("BSA") should be expanded beyond the proposed Project footprint to include the following additional areas: a) both of the on-site "Site Reconfiguration" alternative Project footprints identified in the FSA; b) any habitat areas within the MGS property boundary adjacent to the proposed and alternative site footprints, and; c) any habitat areas outside the MGS property boundary within 100 feet of the proposed and alternative site footprints with potential to support the target species. *In particular, the dunes and vegetated areas to the west and north of the proposed Project site should be included in the BSA, as these areas could represent "source areas" for sensitive wildlife species venturing onto the Project site.*" [italics added for emphasis].

For example, the Applicant's biologists found no California legless lizards in the BSA, which led them to conclude that the Project will not affect this species, however, according to the CNDBB and photographs of the legless lizard (EDC, 2017;TN 217571), this species was discovered near the northern fence line in May 2017, during the same time AECOM conducted its surveys (see legless lizard discussion below). Yet the Survey Report failed to consider or disclose this sighting. The Survey Report improperly excluded most of the demolition access road even though information docketed in May demonstrates the presence of legless lizards within 10 feet of this road along the northern property boundary. By not surveying the entire 100-foot buffer along the northern edge of the Project site, the survey results do not comply with the CCC's recommended survey protocols and fail to provide adequate data as to the presence of the special-status species.

B. The Botanical Surveys Were Also Inadequate Because They Failed to Include the Entire 100-Foot Buffer.

Although the botanical surveys were timed and conducted in such a manner that the target species would have been detected had they been present in the areas that were surveyed in the BSA, as noted previously, the full 100-foot buffer along the northern side of the Project site was not surveyed. Had it been, the Report would have disclosed that the Project buffer area includes federally-designated critical habitat for the Ventura marsh milk-vetch, a State and Federal endangered plant. (See, AECOM, 2015, Figure 4.2-3 Sheet 2.)

Three other special-status plants were discovered in various parts of the BSA during the surveys.

- red sand verbena (*Abronia maritima*), a CNPS 4.2 species;
- woolly seablite (*Suaeda taxifolia*), a CNPS 4.2 species (previously mapped throughout P3 Project area);
- branching beach aster (*Corethrogyne leucophylla*), a former CNPS 4.x plant, but more recently synonymized into common sand aster (*C. filaginifolia*).

Impacts to Red Sand Verbena were not previously disclosed in the FSA. The FSA found that it could only potentially occur north of the Project site (CEC, 2016, p. 4.2-17), yet the Survey Report found it adjacent to the outfall area where it may be subject to direct impacts from the Project. (AECOM, 2017b, p. 3-3.)

C. The Survey Report Did Not Follow the CDFW Recommendations for Special-Status Plant Species Surveys.

AECOM biologists did not follow CDFW's recommendations (CDFW, 2017a) that surveys follow their Rare Plant Survey Protocol (Attachment A, hereinafter cited to as "CDFW, 2009") to include collection of voucher specimens:

> "Voucher specimens provide verifiable documentation of species presence and identification as well as a public record of conditions. This information is vital to all conservation efforts. Collection of voucher specimens should be conducted in a manner that is consistent with conservation ethics, and in accordance with applicable state and federal permit requirements…" Deposit voucher specimens with an indexed regional herbarium no later than 60 days after the collections have been made…" (CDFW, 2009).

Voucher specimens for the "non-target" special-status plants observed in the BSA during the surveys (red sand verbena and woolly seablite) were not collected.

II. ANALYSIS OF SURVEY RESULTS FOR WILDLIFE SPECIES

A. The Globose Dune Beetle *(Coelus globosus)* Surveys Are Inadequate to Conclude This Species Is Not Present in the Project Area.

A combination of walking transects and pitfall trap lines conducted in April-June 2017 were used to survey for dune beetles (AECOM, 2017a and b). The transect surveys included both daytime and nighttime visits. The seasonal timing of transect and pitfall trap surveys were appropriately timed, but there are three main problems with the survey methodologies, as employed:

- The surveyors did not use sieves during the transect surveys when they found beetle "tracks" and thus probably missed many dune beetle occurrences. Instead, they appeared to have relied on observing adult beetles on the surface. Cover objects were lifted and the soil beneath was raked, but the soil should have been put through a sieve to a depth of several inches to capture dune beetles.

- The Survey Report states that, "Due to the number of dune beetle sightings, not every individual live beetle was initially identified to species…)" (AECOM, 2017b, p. 2-3 and p. 3-6). The Report also discloses that dune beetles were found during the herpetological cover board surveys, but were also "not identified to species." (AECOM, 2017b, p. 3-7.) This defeats the single purpose of the surveys - to identify globose dune beetles. All dune beetles encountered should have been identified to species throughout the survey area. Failure to do affects the credibility of the surveys and may have underestimated the distribution and occurrence of globose dune beetles in the BSA.

- The Survey Report states that, "[pitfall] traps were placed throughout the BSA at a density of approximately 20 traps/acre (AECOM, 2017b, p. 2-3), which would have totaled approximately 200 traps in the 9.96-acre BSA. Trap lines were installed only where they had the greatest likelihood of capturing globose dune beetles (AECOM, 2017, p. 2-4). Again, this defeats the purpose of presence-absence sampling. The pitfall trap lines should have been placed systematically across the BSA, either using a stratified random or uniform design (Schaeffer et al., 1990), so that areas of "suitable" and "marginal" habitat could be sampled equally. Indeed, most of the Project area and laydown area was not sampled. (AECOM, 2017 b, Fig A-1 and Fig. 4.) As a result, the negative results obtained from the surveys for the Project site and laydown area/buffer cannot be accepted as proof of absence of globose dune beetles in these areas. Because of unequal sampling intensity, the best that can be said from a comparison of Figure A-1 in Appendix A with Figure 4 is that globose dune beetles were found in most of the areas where pitfall traps were installed and were not found in areas not sampled. Additionally, Figure 4 in the Report shows points where globose dune beetles were "absent". This should properly be labeled, "globose dune beetle not found".

Although this species was found in the buffers around northern and western sides of the main Project area, the surveys were inadequate to conclude that it is absent in the Project area footprint. Failure to adequately sample the entire Project site and to identify all dune beetles encountered during surveys for this and other species (e.g., during cover board and raking surveys for legless lizards; AECOM, 2017b, p. 3-7), may have underestimated the occurrence of globose dune beetles there. Standard biological field procedures are to identify all congeners of the dune beetles, however the Survey Report indicated in several places that the field biologists failed to identify to species of all dune beetles encountered - both onsite and in the buffer. This undermines the credibility of the results and the purpose of the surveys. The negative results thus obtained do not change my conclusions that globose dune beetles have a high potential of occurring in the Project site.

B. Surveys for the Blainville's Horned Lizard *(Phrynosoma blainvillii)* Did Not Include Prime Suitable Habitat in the 100-foot Buffer North of the Project Area.

The surveys were conducted during the Spring and under climatic conditions favorable for horned lizard surface activity. Horned lizards, if active at this time and present in the area surveyed, would have been detected by the surveys. However, the area AECOM surveyed did not include the prime habitat most likely to support the lizard, such as the higher quality dune habitat within the 100-foot buffer.

For example, I found Blaineville's horned lizards in similar dune scrub habitat southeast of the intersection of Harbor Boulevard and West 5th Street, which is approximately one mile SSE of the Project area (Hunt, pers. observ., 1987), as well as approximately 0.25 miles north of the Project site (Hunt, pers. observ., 2004-2005). Horned lizards also were observed in dunes south of the mouth of the Santa Clara River in 2014, north of Project. (Arcadis, 2015; at Appendix C). This locality, although not specified, is presumed to be less than one mile north of the Project area, based on occurrence of dune scrub habitat in that area.

By not including the full 100-foot buffer around the north side of the Project site in the BSA, the negative survey results obtained do not change my conclusions that horned lizards occur here. Additionally, by not considering observations of horned lizards north and south of the Project site, the Report incorrectly concludes that horned lizards have no potential for occurring in the Project site and buffer.

C. California Legless Lizard (*Anniella*, c.f. *A. stebbinsi*) Survey Results Are Unreliable Due to Significant Flaws in the Survey Methodology.

The Survey Report incorrectly characterizes habitat suitability of legless lizards (AECOM, 2017b, p. 1-6) by stating that this species is, "typically restricted to … undisturbed soils." The Survey Report implies that areas disturbed by development have little or no potential to support legless lizards. This is not only incorrect, but seems to have dictated where surveys for this species were to be conducted in the BSA, i.e., only in improperly identified "suitable" habitat. On the contrary, I have commonly found legless lizards in highly disturbed areas, including farmland and residential areas (Hunt, 1997a; Hunt, 2014). For example, legless lizards were relatively common in a three-foot wide strip of sandy soil along a fence line separating residential backyards from a paved access road in Camarillo, Ventura County and, in speaking to residents, they routinely found legless lizards in their gardens, as far as 50 feet from the fence line (Hunt, 2014). Legless lizards survived grading and construction of residential lots on previously intact habitat here (Hunt, 2014). I have found similar occurrences in single-family residential developments in legless lizard habitat within the City of Marina in Monterey County (Hunt and Zander, 1997a).

The point being, disturbance does not preclude legless lizard occurrence and was improperly used to limit the locations of the surveys in the report. Indeed, I would characterize habitat conditions along the northern fence line of the property where I and others have found legless lizards as disturbed, showing evidence of past grading, fence installation, and old roadways (chunks of asphalt and remnants of old asphalt roadways). Plant cover here is a mixture of native and non-native species, similar to that found in disturbed areas north and west of the Project area that are mapped as "ice plant mats" in Figure 2 of the Report.

The Report cites CNDDB records for legless lizards found about 0.5 miles north and 1.5 miles south of the Project area, but does not discuss my previous testimony (Hunt, 2017a) in which I discuss finding this species along the northern fence line of the MGS site in 2005 and 2006. Nor does it discuss recent CNDDB reports that identified two legless lizards very near the Project site, and approximately ten feet from the Project's demolition access road in May 2017. (EDC, 2017; CNDBB, 2017) In addition, the Report fails to disclose other legless lizard observations made within 800-1,000 feet north of the north side of the MGS property (Hunt, 2017a; CNDDB, 2017; Arcadis, 2015, 2016; NRG, 2015—Fig. 4.2-3, sheet 2). CDFW, in their comments on the Draft Survey Methodology, noted that, "Legless lizards have been observed in native habitats immediately north of the proposed Project site." (CDFW, 2017a). By not discussing these other observations, the Report gives the false impression that legless lizards are rare and have only been found several hundred yards away from the Project area when in fact, they have been found along the northern property limits and in the outfall access road buffer and the Demolition Access Road buffer areas, and have a high potential of occurring on the Project site.

1. ***The ineffective use of cover boards reduced the probability of identifying California legless lizards.***

The use of cover boards is a standard passive method of surveying for reptiles and other ground-dwelling animals, but there are a number of problems with the use of cover boards in the AECOM Survey Report:

- **Cover boards were improperly placed only in "…areas with appropriate habitat characteristics [for legless lizards]" (AECOM, 2017b—Section 2.3.1, p. 2-3).** As with the pitfall trap surveys for globose dune beetles, the use of cover boards requires a random or uniform sampling effort so that areas of marginal habitat quality are subject to the same sampling intensity as "suitable" habitat areas (Shaeffer et al., 1990). Without a systematic approach, the surveyor reinforces a preconceived notion of "good" versus "poor" legless lizard habitat.
- **The total area of the 40 cover boards amounted to 320 square feet, or only 0.07% of the 9.96-acre BSA.** Although legless lizards can be abundant in coastal and inland dunes, even in disturbed dunes (e.g., 924 lizards/acre), their distribution is spatially

highly variable making cover boards a poor choice as a survey method (see next point) (Hunt 1997b, 2008; Kuhnz, 2000).

- **The cover boards were not properly placed to effectively attract legless lizards.** Normally, several seasons up to a year or more is necessary for the boards to create the right microhabitats to function as refugia for lizards and snakes (Fitch, 1999). I visited portions of the BSA accessible to the public on 10 April 2017 and noted that a number of the cover boards were warped, allowing only parts of the board to contact the soil (sand) surface. The fact that the boards were only left in the field for two months or less meant that they had little chance to create the microclimatic and microhabitat conditions favored by the legless lizards or other target species, or their invertebrate prey.

The cover board sampling method, while valid in some circumstances, was too limited in scope and of too short a duration to be of use in assessing presence/absence of legless lizards in the BSA. (Hunt, 2017b) recommended that cover boards, if employed, be left in the field from Spring 2017 at least through December 2017. As a result, the small number of cover boards used and the fact that the boards did not have sufficient time to create suitable conditions for legless lizards or their prey, means that the negative results obtained by this survey method are inconclusive.

2. *The ineffective use of raking surveys reduced the probability of finding legless lizards*.
I recommended previously (Hunt, 2017b), that active survey methods for legless lizards, i.e., raking surveys, be employed as the primary survey method throughout the survey area because this method has the greatest likelihood of finding legless lizards, if present. The surveyors employed time-constrained (30 minutes) raking surveys of twenty (20) 15 x 15 ft plots, which sampled a total area of 4,500 s.f., or just over 1% of the 9.96-acre BSA**.** This left 99% of the BSA unsampled using the method most likely to find lizards, i.e., raking. In my experience, raking surveys conducted throughout the Project area and buffers on a bi-monthly or monthly basis would have been the most effective and efficient method of sampling the BSA for legless lizards because it would have covered all representative site conditions.

As discussed above, legless lizards were found very near the Project Site and in the buffer, one in or adjacent to the Outfall Access Survey Area and one along the northern fence line, just ten feet from the Demolition Access Road on 5 May 2017. (CNDDB, 2017; EDC, 2017). Both of these sites were within 15-50 feet of search plots where AECOM biologists found no lizards. CDFW in their comments on the Draft Survey Methodology, noted that, “Legless lizards have been observed in native habitats immediately north of the proposed Project site.” (CDFW, 2017a). None of these observations are acknowledged in the Final Survey Report. Systematic use of raking-type surveys across the Project area and the full 100-foot buffer would likely have found additional lizards, especially along the northern fence line of the property and in areas mapped on Figure 2 of the Survey Report as “Ice Plant Mats” (AECOM, 2017b).

The Survey Report claims that the only suitable habitat for legless lizards in the BSA occurs in the Outfall Area, access road, and associated survey buffers (AECOM, 2017b, p. 1-7). This is incorrect because the BSA did not include suitable habitat within the full 100-foot buffer area along the northern edge of the Project site, and suitable habitat occurs between the 100-foot buffer on the western side of the Project site and the western fence line of the MGS facility (Hunt, pers. observ., 2017). The Report fails to cite recent findings of legless lizards north and west of the MGS facility and elsewhere, at locations much closer to the Project area (Arcadis, 2015, 2016; NRG, 2015; CNDDB, 2017; EDC, 2017).

By not employing wider use of raking surveys, not surveying the full 100-foot buffer along the north side of the Project site, and by omitting recent observations of legless lizards very close to the Project site in the buffer area surrounding the demolition access road, the Survey Report misrepresents the potential for the Project site to support legless lizards. Therefore, my conclusion remains that there is a high probability for legless lizards to occur on site.

D. The Two-Striped Garter Snake *(Thamnophis hammondii)* Presence and Distribution Is Misrepresented in the Survey Report.

The Survey Report erroneously states that there are no occurrences of this species within a one mile radius of the BSA, contrary to my earlier testimony, where I observed an adult snake of this species feeding on amphibian larvae along the southern shoreline of McGrath Lake (Hunt, 2017a; CEC, 2016, p. 4.2-18). This observation was about 400 feet NW of the northwestern corner of the P3 Project area. In addition, two-striped garter snakes have repeatedly been observed on the McGrath Lake Parcel habitat restoration site, immediately north of the Project area:

> "Arcadis personnel observed two-striped garter snakes on at least three separate occasions during wetland creation work in 2014 and 2015. CIR [staff] observed and photographed [this species] while conducting invasive weed removal work at the McGrath Parcel. Existing habitat at the McGrath Parcel is considered good to excellent for [this species]." (Arcadis, 2015).

The Report states that this species was surveyed for at the same time as horned lizards, using transect surveys, and incidentally while conducting cover board and plot raking surveys for legless lizards. The transect surveys would have detected this species, if it was present in the areas surveyed at the time of the surveys. However, the full 100-foot buffer around the Project area, particularly north of the Project area where garter snake habitat occurs, was not surveyed. The home range of this species is highly variable, depending on sex, season, and habitat quality. One study in San Luis Obispo County found that the home ranges of 10 individual snakes ranged from 0.015-2.25 acres in size, and that snakes used aquatic and

wetland sites in the summer and upland habitats in the winter (Rathburn, 1993; Jennings and Hayes, 1992). These data suggest that snakes inhabiting aquatic habitats around McGrath Lake and the wetland restoration site north of the Project area could include habitats within or in close proximity to the Project area as foraging habitat at certain times of the year.

The fact that the surveys did not find two-striped garter snakes in the BSA at the survey times is not conclusive proof that the species does not occur there because: a) the full 100-foot buffer was not surveyed; b) this species has been found within a few hundred feet of the Project site, and; c) the home range of snakes occurring north of the Project site could overlap the site itself.

E. The Burrowing Owl *(Athene cunicularia)* Survey Results Cannot Conclude Absence Because They Were Not Conducted at the Appropriate Time of Year in Accordance with CDFW protocols.

Burrowing owl surveys followed established protocols in terms of how they were conducted, but not according to seasonal proscriptions in accordance with CDFW protocols. (CDFW, 2012). Five transect surveys, spaced one week apart, were conducted between 13 April and 11 May 2017, with an additional survey on 16 June 2017 (AECOM, 2017b). These transects were spaced 20 feet apart and covered the entire BSA. Burrowing owls would have been detected by this methodology, so I accept their findings that no burrowing owls were present in the BSA *at this time*. However, most of the sightings of this species in the Project region are fall transients or wintering birds (AECOM, 2017b, p. 1-7 and 1-8). The surveys should be repeated from October-April to be considered definitive and exhaustive (CDFW,2012; CDFW, 2017, p. 1; CCC, 2017, p. 3). The Report's negative survey results in the BSA, regardless of timing, do not preclude the possibility that one or more burrowing owls could seasonally use the Project area as foraging habitat from known fall/winter observations of this species immediately north of the Project area, per observations previously noted in AECOM, (2017b) pages 3-8.

F. New Evidence Supports On-Site ESHA Designation for Fully Protected Peregrine Falcon.

The Survey Report discloses observations of peregrine falcon (*Falco peregrinus*), the great horned owl (*Bubo virginianus)*, and California horned lark (*Eremophila alpestris actia*). The Survey Report notes that evidence of avian prey remains indicates peregrine falcons use the BSA for foraging. (AECOM, 2017b, p. 3-10) Table D-1 in the survey Report discloses the presence of peregrine falcons on the P3 site and buffer, as well as the Outfall, the Outfall Access Road, and Buffer Area. (AECOM, 2017b, Appendix D). The presence of peregrine falcon, a California Fully Protected species, and their foraging habitat on-site, meets the criteria for classifying these areas as Environmentally Sensitive Habitat Area ("ESHA") under the Coastal Act. (See, Exhibit 4017 at 10-11). The Survey Report's documented presence of Peregrine Falcons and their foraging habitat on the P3 site, the buffer, the Outfall, the Outfall Access

Road, and the laydown area is significant new information about ESHA on site and in the buffer area.

G. Other Avian Surveys

Surveys also were conducted for western snowy plover, California least tern, least Bell's vireo, white-tailed kite, northern harrier, and California black rail. Five surveys were conducted for these species (and all other avian species) between 17 April and 9 May 2017. The surveys consisted of meandering walking surveys of all habitats present in the BSA. None of the target species were observed during these surveys. I accept the negative survey findings for the season at which they were conducted, meaning that each of these species, if present during the surveys, would have been observed during the surveys conducted at this time. However, the survey dates represent only 1% of the year and some of these species are more common regionally, including the Project area, during the fall and winter. Specific comments:

1. **Western snowy plover (*Charadrius alexandrinus* subsp. *nivosus*).** The surveys were adequate to detect this species, if present, in the Project area. Exclusion fencing for nesting snowy plovers was present on the beach several hundred feet south of the outfall area during the AECOM surveys (pers. observ., 10 April 2017). However, the Report fails to note that critical habitat for this species includes the BSA up to the western fence line, the outfall access road, the outfall area, and its buffer (NRG, 2015, fig. 4.2-3, Sheet 2).

2. **California least tern (*Sterna antillarum browni*).** The surveys for this species were not conducted along the Edison Canal, which the Report considers potential foraging habitat for this species (AECOM, 2017b, p. 1-8).

3. **Least Bell's vireo (*Vireo bellii pusillus*).** Protocol-level surveys for least Bell's vireos were not conducted. The protocol requires at least eight surveys conducted between 10 April and 31 July) (USFWS, 2001). The five avian surveys that were conducted between mid-April and mid-May 2017, would have probably detected this species if it was present in the Project area at this time, but no effort was made to check reference sites, i.e., sites where the species is nesting to document nesting phenology. Contrary to the Report's assertion that there are no CNDDB records for this species within one mile of the Project area (AECOM, 2017b, p. 1-9), Bell's vireos have been recorded as nesting in willow woodland at McGrath State Beach, several hundred feet north of the Project area (Arcadis, 2015, 2016). Although the Project area does not appear to contain nesting habitat for this species, mule fat and willow scrub in the Project area and buffer may provide foraging habitat for birds and/or fledglings nesting north of the Project area. Surveys that included pairs nesting on McGrath State Beach property as reference sites should be conducted to provide more conclusive evidence of presence/absence of this species in the Project area.

4. **Northern harrier (*Circus cyaneus*) and White-tailed kite (*Elanus leucurus*).** These conspicuous species would have been detected by the surveys if they had been present on-site in April/May. However, both species are more common in coastal Ventura County, including the Project vicinity, as fall transients and/or wintering birds. The Report, relying solely on CNDDB records, incorrectly states that kites have not been observed within 10 miles of the Project area. However, Arcadis (2015) observed kites foraging over the McGrath Parcel habitat restoration site in 2014, which lies 150-950 feet NE of the Project area. This indicates that the information on kite occurrence in the vicinity of the Project area is not based on the best available information. Surveys for harriers and kites should be conducted in fall/winter to assess potential use of the Project areas as foraging habitat by one or more individuals.

III. New Information from Survey Results

A. Wetlands: Survey Results Identify Presence of Previously Undisclosed Hydrophyte in 0.52 Acre Coyote Brush Scrub Habitat On-Site.

An approximately 0.52-acre area in the southeastern portion of the Project area is mapped in the FSA as Coyote Bush Scrub (AECOM, 2017b, Fig. 2; see also NRG, 2015, Fig. 4.2-2). Although the Applicant was not asked to conduct botanical surveys for species other than the Orcutt pincushion, Ventura marsh milk-vetch, and the salt marsh bird's-beak, the Report discloses for the first time that the on-site 0.52-acre coyote brush scrub community supports pickleweed (*Salicornia pacifica*), a wetland obligate species that indicates the presence of a potential wetland (AECOM, 2017b, Appendix C, page C-3). Neither the FSA nor the 2015 Application discloses the presence of pickleweed in this area. For example, Table 4.2-2 of the Application provides a plant list of all species observed on site and in the vicinity, but did not record pickleweed in the 0.52-acre coyote brush scrub area. Given this new information, and that there is no indication that a wetland delineation has ever been conducted in this area, a wetland delineation of this 0.52-acre area should be conducted to formally determine if the wetland species, such as woolly seablite and pickleweed, meet the Coastal Act's definition of a wetland.

B. Wetlands: The Report's information concerning the 2.03-acre wetland does not change the results of the wetland delineation under the Coastal Commission's definition of wetlands.

The Survey Report includes Section 3.7.2 on p. 3-11, titled, "Change in Wetland Delineation Results", and claims that the wetland indicator status of the slenderleaf iceplant (*Mesembryanthemum nodiflorum*) was changed from facultative to facultative upland. (AECOM, 2017b, p. 3-11) The Report then recalculates the wetland delineations from the

March and April 2015 site assessments and attaches a revised Army Corp of Engineers Wetland Determination Data Forms. (AECOM, 2017b, Appendix K). The Report states that, as a result of the change in the wetland indicator status of the slenderleaf iceplant, the two points surveyed for wetlands no longer show a dominance of hydrophytes present, that there is a "lack of hydrophytic vegetation at these two sampling points" and that this "indicates a lack of hydrophytic vegetation throughout the site." (AECOM, 2017b, p. 3-11). The Report then concludes, without ever applying the Coastal Act's definition of a wetland, that "this evidence further supports the Applicant's determination that wetlands are not present in the Project site." (*Id*.)

The Report's information and conclusions are inaccurate. It appears to repeat the same mistake made earlier by the Applicant's consultants, specifically treating the Coastal Act's definition of wetlands as a two- or three-parameter definition instead of a one-parameter definition. (AECOM, 2015, 4.2-8) The CCC's 30413(d) Report and Dr. Engel's memo attached to that report both confirm the Coastal Commission's regulations establish a one parameter definition of a wetland and that the 2.03-acre wetland on site met that definition. (CCC, 2016, and Appendix Attachment C (attached here as Attachment G); See also Attachment H, hereinafter cited to as (CCC, 2011)).

A formal wetland delineation of the Project site conducted by the Applicant's consultant concluded that the site did not support wetlands, as defined by the U.S. Army Corps of Engineers (NRG, 2015, p. 4.2-8) because all three wetland indicators (hydric soils, hydrology, and vegetation) were not present. However, according to the CCC's 30413(d) Report (CCC, 2016), under the definition of a wetland contained in the Coastal Commission's regulations and the City of Oxnard's certified Local Coastal Plan, only *one* of these three wetland indicators need to be present for the area to be classified as coastal wetland (CCC, 2016, at Section I.d; CCC, 2011). Even given the Applicant's revised wetland delineation calculations, hydrophytic vegetation is still predominant in the 2.03 wetland because it meets the prevalence index test (AECOM, 2017b, Appendix K), which establishes that the one-parameter test was met for vegetation. (Attachment F, hereinafter cited to as "CCC, 2014"). Thus, the change in wetland indicator status for the slenderleaf iceplant does not change the status of the 2.03 acre wetland on site. As a result, wetland buffers established for the 2.03-acre coastal wetland on the basis of the presence of hydrophytic vegetation would severely constrain the proposed Project site.

C. New Information Discloses ESHA Is Present on the Project Site and Buffer Area

Table 1: Habitat or Species Found in Project Site* That Trigger ESHA Designation.

Species	Regulatory Status	Location in Project Site	Reference for This Project
Dune mats (beachbur-red sand verbena-European sea rocket herbaceous alliance) (*Ambrosia chamissonis-Abronia maritima-Cakile maritima*)	CDFW Sensitive Natural Community (Holland, 1986; Sawyer et al., 2008)	Outfall area	AECOM, 2017b; p.3-5
Pickleweed (*Salicornia pacifica*)	Hydrophyte; wetland indicator	P3 Site and buffer Laydown Area and buffer	AECOM, 2017b; Table C-1
Globose dune beetle (*Coelus globosus*)	CA Species of Special Concern	P3 site and buffer Outfall area and access road and buffer	AECOM, 2017b; Table D-1
CA legless lizard (genus *Anniella*)	CA Species of Special Concern	Demolition access road buffer	CNDDB, 2017
Peregrine falcon (*Falco peregrinus*)	CA Fully Protected	P3 Site and buffer Laydown Area and buffer Outfall area and access road buffer	AECOM, 2017b; p. 3-10 and Table D-1
Coastal dunes	CDFW Sensitive Natural Community (Holland, 1986; Sawyer et al., 2008)	P3 Site buffer Access road buffer	CEC, 2017a.

*** Project Site refers to P3 site, laydown area, access roads, outfall area, and their associated buffers.**

1. ESHA On-Site: Fully Protected Peregrine Falcons and Foraging Habitat

As discussed above, the Survey Report reveals the presence of peregrine falcons, a CA Fully Protected species, and their foraging habitat on the P3 site, Outfall Access Road, and laydown area.

2. ESHA in Buffer: Dunes, Peregrine Falcon, Globose Dune Beetle and the California Legless Lizard

a. Dunes

The City of Oxnard Land Use Plan (City of Oxnard, 1982) states that, "The California Coastal Act defines "Environmentally Sensitive Areas", or ESHA, as: "Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Pub. Resources Code, § 30107.5). There are three important elements to the definition of ESHA (CCC 2003). First, a geographic area can be designated ESHA either because of the presence of individual species of plants or animals or because of the presence of a particular habitat. Second, in order for an area to be designated as ESHA, the species or habitat

must be either rare or it must be especially valuable. Finally, the area must be easily disturbed or degraded by human activities.

New information derived from the Coastal Commission biologist's site visit during the surveys, (Dr. Jonna Engel) indicate that site maps showing "ice plant mats" on Figure 4--Vegetation Communities (AECOM, 2017b) that borders the entire north and western sides of the Puente site, are in fact dune habitat. (CEC, 2017). If Dr. Engel's observations are accurate, this dune habitat would trigger a new ESHA designation because coastal dunes are widely recognized as among the most sensitive habitats in California (Holland, 1986; Sawyer, et al. 2008).

Dunes in and immediately around the Project area qualify as ESHA because they support documented occurrences of special-status plants and/or animals (e.g., globose dune beetle and California legless lizard). The City of Oxnard mapped dunes north, west, and south of the MGS site as "sensitive habitat" (City of Oxnard, 1982; Map No. 7, p. 27) and Local Coastal Policy 6d proscribed a 100-foot buffer around all resource protection areas (City of Oxnard, 1982, p. III-11)). If a 100-foot buffer were established around dune habitat identified in the buffer areas by Dr. Engel, the size of the proposed Project area would be significantly reduced, as shown in Figure 1 below.

Figure 1. Interior edge of dune ESHA (white line) and 100-foot buffer established around ESHA (yellow line) in relation to the proposed Project area (blue line) on MGS site.

b. Peregrine Falcon in Buffer

As discussed above, and shown in Table 1, the Survey Report also reveals the presence of peregrine falcons, a CA Fully Protected species, and their foraging habitat in the buffer area.

c. Globose Dune Beetle in Buffer

As discussed above, and shown in Figure 1, the Survey Report reveals new information in the results that document the presence of the special-status globose dune beetle in the Project's northern and western buffer area.

d. California Legless Lizard in Buffer

As discussed above, and shown in Figure 1, photographs attached to the Declaration of Brian Trautwein (EDC, 2017), and the CNDBB (CNDBB, 2017), report the presence of special-status California legless lizard, a California Species of Special Concern, found in May 2017 in the buffer area ten feet from the Project site's Demolition Access Road.

IV. ANALYSIS OF REVISED CONDITIONS OF CERTIFICATION IN LIGHT OF NEW INFORMATION AND EVIDENCE.

Condition of Certification BIO-7 Regarding 100-foot ESHA Buffers Drastically Reduces Potential Project Footprint. Condition BIO7-13 of the original Conditions of Certification in the FSA states that, "Construction activities will maintain a 100-feet [sic] buffer from all ESHA." (CEC, 2016, p. 4.2-74). Figure 1 indicates how the Project area would be reduced by buffers established solely on the basis of dune ESHA.

Applicant and Staff Changes to Condition BIO-7 Removes Protections for ESHA. The revision of BIO 7-13 proposed by the Applicant (NRG, 2017), would restrict application of 100-foot ESHA buffers only to McGrath Lake and dunes that serve as nesting habitat for western snowy plovers and California least terns (NRG, 2017; CEC, 2017b.) This revision ignores buffers associated with any designation of ESHA within the Project area and buffers, including wetlands, and is inconsistent with Local Coastal Plan and CCC recommendations for 100-foot buffers around all ESHA (City of Oxnard, 1982, Map No.7; CCC, 2016, p. 16).

Importantly, new information about the presence of ESHA within the Project area 100-foot buffer implicates these changes to Condition 7-13. As a result of these changes, the newly discovered ESHAs in the Project area 100-foot buffer would not be afforded the standard 100-foot ESHA buffer protections recommended by the Coastal Commission and included in the Oxnard LCP as required to comply with the Coastal Act.

Condition of Certification BIO-9 as Modified by the Applicant May Not Account for the Potential 0.52-acre Wetland on the Project Site. Condition BIO-9 of the original Conditions of Certification states that, "The Project owner shall fully mitigate for permanent impacts to on-site wetlands at a 4:1 ratio." Mitigation resulting from filling of the 2.03-acre wetland on-site would require creation of at least 8.12 acres (CCC, 2016). If the 0.52-acre area is found to be wetland after a formal wetland delineation, adding this area to the 2.03 acre wetland means

that 2.55 acres will be permanently lost to construction. Consequently, a total of 10.2 acres of coastal wetlands (2.55 acres x 4.0 mitigation ratio) would have to be created to fully mitigate loss of the on-site wetlands.

Condition of Certification 9 Relies Too Heavily on Off-Site Wetland Mitigation and Should Require Mitigation to Occur Nearby. Condition BIO-9 also states that, "Mitigation shall occur using an established wetland restoration program or mitigation bank, with preference given to programs within the same watershed as the Project (Santa Clara [River] and Calleguas [Creek]…". Wetlands must be preserved on-site to the fullest extent feasible. Should it prove infeasible to preserve on-site wetlands, on-site or off-site wetland restoration is required by Condition BIO-9 (City of Oxnard, 1982; CCC 2016). Condition BIO-9, however, is inconsistent with State regulatory agency policy that requires mitigation to occur as close to the Project site as possible (CDFW, 2016; CCC, 2016). The loss of on-site wetlands, should it occur, should be mitigated by purchase of remaining dune parcels near the NRG site, e.g., the parcel southeast of the intersection of Harbor Boulevard x West 5th Street. Many of the special-status species found in and around the Project area occur on this parcel, e.g., globose dune beetle, California legless lizard, Blainville's horned lizard--Hunt, pers. observ.), and wetlands could be created to offset loss of on-site wetlands. In short, the mitigation area is too open-ended regarding the location of mitigation and the mitigation area should be restricted to coastal/interior dunes between the mouth of the Santa Clara River and Port Hueneme, and must be dedicated by applicable mechanisms for protection in perpetuity.

V. CONCLUSIONS AND SIGNIFICANT FINDINGS

- The BSA does not encompass the entire Project site, including the Demolition Access Road, and may have overlooked special-status species as a result.

- The Applicant's survey methodology did not follow the Coastal Commission's recommended protocol and failed to conduct a complete survey of the site's entire 100-foot buffer, excluding prime habitat for the horned lizard, globose dune beetle, and legless lizard, and critical habitat for the Ventura marsh milk-vetch.

- New evidence reveals special-status species, such as the globose dune beetle, California legless lizard, and peregrine falcon are also present within the buffer zone on the Project site boundary, which triggers an ESHA designation.

- New information demonstrates that the Fully Protected peregrine falcon, a special-status species, is present and forages on the P3 site, the laydown area, the outfall access road, the outfall, and the buffers, which triggers an on-site ESHA designation.

- Three special-status plant species which were not identified as target species were identified within the BSA: red sand verbena, branching beach aster, and woolly seablite.

- Burrowing owl surveys were not conducted in accordance with CDFW protocols.

- The Survey Report's wildlife surveys for special–status species were inadequate due to a combination of factors, including: a) improper application of survey techniques; b) insufficient survey duration; c) improper timing of surveys, and; d) inadequate sample size or spatial application of recommended survey methods;

- The Survey Report admits that the biologists did not follow standard biological survey field methods for globose dune beetle surveys because the surveyors did not identify each live dune beetle to species.

- 99% of the BSA was not sampled using the method most likely to find California legless lizards, i.e., raking surveys.

- The 2.03-acre wetland delineation on-site still meets the Coastal Commission's one-parameter definition of a coastal wetland (prevalence of hydrophytic vegetation)**.**

- The 100-foot buffer recommended by the CCC for ESHA would significantly restrict the Project footprint on site.

- A 100-foot buffer from onsite wetland(s) could potentially make the site unbuildable.

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LIST OF ATTACHMENTS

Attachment A: CDFW, 2009
Attachment B: Arcadis, 2015
Attachment C: CNDDB, 2017
Attachment D: CDFW 2012,
Attachment E: USFWS, 2001
Attachment F: CCC,2014
Attachment G: CCC, 2016, Appendix Attachment C
Attachment H: CCC, 2011
Attachment I : Arcadis, 2016

Attachment A

Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities

State of California
CALIFORNIA NATURAL RESOURCES AGENCY
Department of Fish and Game
November 24, 2009[1]

INTRODUCTION AND PURPOSE

The conservation of special status native plants and their habitats, as well as natural communities, is integral to maintaining biological diversity. The purpose of these protocols is to facilitate a consistent and systematic approach to the survey and assessment of special status native plants and natural communities so that reliable information is produced and the potential of locating a special status plant species or natural community is maximized. They may also help those who prepare and review environmental documents determine when a botanical survey is needed, how field surveys may be conducted, what information to include in a survey report, and what qualifications to consider for surveyors. The protocols may help avoid delays caused when inadequate biological information is provided during the environmental review process; assist lead, trustee and responsible reviewing agencies to make an informed decision regarding the direct, indirect, and cumulative effects of a proposed development, activity, or action on special status native plants and natural communities; meet California Environmental Quality Act (CEQA)[2] requirements for adequate disclosure of potential impacts; and conserve public trust resources.

DEPARTMENT OF FISH AND GAME TRUSTEE AND RESPONSIBLE AGENCY MISSION

The mission of the Department of Fish and Game (DFG) is to manage California's diverse wildlife and native plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. DFG has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Fish and Game Code §1802). DFG, as trustee agency under CEQA §15386, provides expertise in reviewing and commenting on environmental documents and makes protocols regarding potential negative impacts to those resources held in trust for the people of California.

Certain species are in danger of extinction because their habitats have been severely reduced in acreage, are threatened with destruction or adverse modification, or because of a combination of these and other factors. The California Endangered Species Act (CESA) provides additional protections for such species, including take prohibitions (Fish and Game Code §2050 *et seq.*). As a responsible agency, DFG has the authority to issue permits for the take of species listed under CESA if the take is incidental to an otherwise lawful activity; DFG has determined that the impacts of the take have been minimized and fully mitigated; and, the take would not jeopardize the continued existence of the species (Fish and Game Code §2081). Surveys are one of the preliminary steps to detect a listed or special status plant species or natural community that may be impacted significantly by a project.

DEFINITIONS

Botanical surveys provide information used to determine the potential environmental effects of proposed projects on all special status plants and natural communities as required by law (i.e., CEQA, CESA, and Federal Endangered Species Act (ESA)). Some key terms in this document appear in **bold font** for assistance in use of the document.

For the purposes of this document, **special status plants** include all plant species that meet one or more of the following criteria[3]:

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1 This document replaces the DFG document entitled "Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities."

2 http://ceres.ca.gov/ceqa/

3 Adapted from the East Alameda County Conservation Strategy available at http://www.fws.gov/sacramento/EACCS/Documents/080228_Species_Evaluation_EACCS.pdf

- Listed or proposed for listing as threatened or endangered under ESA or candidates for possible future listing as threatened or endangered under the ESA (50 CFR §17.12).

- Listed[4] or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code §2050 *et seq.*). A species, subspecies, or variety of plant is **endangered** when the prospects of its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors (Fish and Game Code §2062). A plant is **threatened** when it is likely to become endangered in the foreseeable future in the absence of special protection and management measures (Fish and Game Code §2067).

- Listed as rare under the California Native Plant Protection Act (Fish and Game Code §1900 *et seq*.). A plant is **rare** when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901).

- Meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:

  - Species considered by the California Native Plant Society (CNPS) to be "rare, threatened or endangered in California" (Lists 1A, 1B and 2);

  - Species that may warrant consideration on the basis of local significance or recent biological information[5];

  - Some species included on the California Natural Diversity Database's (CNDDB) *Special Plants, Bryophytes, and Lichens List* (California Department of Fish and Game 2008)[6].

- Considered a **locally significant species,** that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

Special status natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special status species or their habitat. The most current version of the Department's *List of California Terrestrial Natural Communities*[7] indicates which natural communities are of special status given the current state of the California classification.

Most types of wetlands and riparian communities are considered special status natural communities due to their limited distribution in California. These natural communities often contain special status plants such as those described above. These protocols may be used in conjunction with protocols formulated by other agencies, for example, those developed by the U.S. Army Corps of Engineers to delineate jurisdictional wetlands[8] or by the U.S. Fish and Wildlife Service to survey for the presence of special status plants[9].

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4 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

5 In general, CNPS List 3 plants (plants about which more information is needed) and List 4 plants (plants of limited distribution) may not warrant consideration under CEQA §15380. These plants may be included on special status plant lists such as those developed by counties where they would be addressed under CEQA §15380. List 3 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a List 4 plant are significant even if individual project impacts are not. List 3 and 4 plants are also included in the California Natural Diversity Database's (CNDDB) *Special Plants, Bryophytes, and Lichens List.* [Refer to the current online published list available at: http://www.dfg.ca.gov/biogeodata.] Data on Lists 3 and 4 plants should be submitted to CNDDB. Such data aids in determining or revising priority ranking.

6 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

7 http://www.dfg.ca.gov/biogeodata/vegcamp/pdfs/natcomlist.pdf. The rare natural communities are asterisked on this list.

8 http://www.wetlands.com/regs/tlpge02e.htm

9 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/protocol.htm

BOTANICAL SURVEYS

Conduct botanical surveys prior to the commencement of any activities that may modify vegetation, such as clearing, mowing, or ground-breaking activities. It is appropriate to conduct a botanical field survey when:

- Natural (or naturalized) vegetation occurs on the site, and it is unknown if special status plant species or natural communities occur on the site, and the project has the potential for direct or indirect effects on vegetation; or
- Special status plants or natural communities have historically been identified on the project site; or
- Special status plants or natural communities occur on sites with similar physical and biological properties as the project site.

SURVEY OBJECTIVES

Conduct field surveys in a manner which maximizes the likelihood of locating special status plant species or special status natural communities that may be present. Surveys should be **floristic in nature**, meaning that every plant taxon that occurs on site is identified to the taxonomic level necessary to determine rarity and listing status. "Focused surveys" that are limited to habitats known to support special status species or are restricted to lists of likely potential species are not considered floristic in nature and are not adequate to identify all plant taxa on site to the level necessary to determine rarity and listing status. Include a list of plants and natural communities detected on the site for each botanical survey conducted. More than one field visit may be necessary to adequately capture the floristic diversity of a site. An indication of the prevalence (estimated total numbers, percent cover, density, etc.) of the species and communities on the site is also useful to assess the significance of a particular population.

SURVEY PREPARATION

Before field surveys are conducted, compile relevant botanical information in the general project area to provide a regional context for the investigators. Consult the CNDDB[10] and BIOS[11] for known occurrences of special status plants and natural communities in the project area prior to field surveys. Generally, identify vegetation and habitat types potentially occurring in the project area based on biological and physical properties of the site and surrounding ecoregion[12], unless a larger assessment area is appropriate. Then, develop a list of special status plants with the potential to occur within these vegetation types. This list can serve as a tool for the investigators and facilitate the use of reference sites; however, special status plants on site might not be limited to those on the list. Field surveys and subsequent reporting should be comprehensive and floristic in nature and not restricted to or focused only on this list. Include in the survey report the list of potential special status species and natural communities, and the list of references used to compile the background botanical information for the site.

SURVEY EXTENT

Surveys should be comprehensive over the entire site, including areas that will be directly or indirectly impacted by the project. Adjoining properties should also be surveyed where direct or indirect project effects, such as those from fuel modification or herbicide application, could potentially extend offsite. Pre-project surveys restricted to known CNDDB rare plant locations may not identify all special status plants and communities present and do not provide a sufficient level of information to determine potential impacts.

FIELD SURVEY METHOD

Conduct surveys using **systematic field techniques** in all habitats of the site to ensure thorough coverage of potential impact areas. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified. Conduct surveys by walking over the entire site to ensure thorough coverage, noting all plant taxa

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10 Available at http://www.dfg.ca.gov/biogeodata/cnddb

11 http://www.bios.dfg.ca.gov/

12 Ecological Subregions of California, available at http://www.fs.fed.us/r5/projects/ecoregions/toc.htm

observed. The level of effort should be sufficient to provide comprehensive reporting. For example, one person-hour per eight acres per survey date is needed for a comprehensive field survey in grassland with medium diversity and moderate terrain[13], with additional time allocated for species identification.

TIMING AND NUMBER OF VISITS

Conduct surveys in the field at the time of year when species are both evident and identifiable. Usually this is during flowering or fruiting. Space visits throughout the growing season to accurately determine what plants exist on site. Many times this may involve multiple visits to the same site (e.g. in early, mid, and late-season for flowering plants) to capture the floristic diversity at a level necessary to determine if special status plants are present[14]. The timing and number of visits are determined by geographic location, the natural communities present, and the weather patterns of the year(s) in which the surveys are conducted.

REFERENCE SITES

When special status plants are known to occur in the type(s) of habitat present in the project area, observe reference sites (nearby accessible occurrences of the plants) to determine whether those species are identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural community.

USE OF EXISTING SURVEYS

For some sites, floristic inventories or special status plant surveys may already exist. Additional surveys may be necessary for the following reasons:

- Surveys are not current[15]; or
- Surveys were conducted in natural systems that commonly experience year to year fluctuations such as periods of drought or flooding (e.g. vernal pool habitats or riverine systems); or
- Surveys are not comprehensive in nature; or fire history, land use, physical conditions of the site, or climatic conditions have changed since the last survey was conducted[16]; or
- Surveys were conducted in natural systems where special status plants may not be observed if an annual above ground phase is not visible (e.g. flowers from a bulb); or
- Changes in vegetation or species distribution may have occurred since the last survey was conducted, due to habitat alteration, fluctuations in species abundance and/or seed bank dynamics.

NEGATIVE SURVEYS

Adverse conditions may prevent investigators from determining the presence of, or accurately identifying, some species in potential habitat of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any given year. Discuss such conditions in the report.

The failure to locate a known special status plant occurrence during one field season does not constitute evidence that this plant occurrence no longer exists at this location, particularly if adverse conditions are present. For example, surveys over a number of years may be necessary if the species is an annual plant having a persistent, long-lived seed bank and is known not to germinate every year. Visits to the site in more

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13 Adapted from U.S. Fish and Wildlife Service kit fox survey guidelines available at www.fws.gov/sacramento/es/documents/kitfox_no_protocol.pdf

14 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/protocol.htm

15 Habitats, such as grasslands or desert plant communities that have annual and short-lived perennial plants as major floristic components may require yearly surveys to accurately document baseline conditions for purposes of impact assessment. In forested areas, however, surveys at intervals of five years may adequately represent current conditions. For forested areas, refer to "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf

16 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/botanicalinventories.pdf

than one year increase the likelihood of detection of a special status plant especially if conditions change. To further substantiate negative findings for a known occurrence, a visit to a nearby reference site may ensure that the timing of the survey was appropriate.

REPORTING AND DATA COLLECTION

Adequate information about special status plants and natural communities present in a project area will enable reviewing agencies and the public to effectively assess potential impacts to special status plants or natural communities[17] and will guide the development of minimization and mitigation measures. The next section describes necessary information to assess impacts. For comprehensive, systematic surveys where no special status species or natural communities were found, reporting and data collection responsibilities for investigators remain as described below, excluding specific occurrence information.

SPECIAL STATUS PLANT OR NATURAL COMMUNITY OBSERVATIONS

Record the following information for locations of each special status plant or natural community detected during a field survey of a project site.

- A detailed map (1:24,000 or larger) showing locations and boundaries of each special status species occurrence or natural community found as related to the proposed project. Mark occurrences and boundaries as accurately as possible. Locations documented by use of global positioning system (GPS) coordinates must include the datum[18] in which they were collected;
- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If the species is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;
- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);
- If applicable, information about the percentage of individuals in each life stage such as seedlings vs. reproductive individuals;
- The number of individuals of the species per unit area, identifying areas of relatively high, medium and low density of the species over the project site; and
- Digital images of the target species and representative habitats to support information and descriptions.

FIELD SURVEY FORMS

When a special status plant or natural community is located, complete and submit to the CNDDB a California Native Species (or Community) Field Survey Form[19] or equivalent written report, accompanied by a copy of the relevant portion of a 7.5 minute topographic map with the occurrence mapped. Present locations documented by use of GPS coordinates in map and digital form. Data submitted in digital form must include the datum[20] in which it was collected. If a potentially undescribed special status natural community is found on the site, document it with a Rapid Assessment or Relevé form[21] and submit it with the CNDDB form.

VOUCHER COLLECTION

Voucher specimens provide verifiable documentation of species presence and identification as well as a public record of conditions. This information is vital to all conservation efforts. Collection of voucher specimens should

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17 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata. For Timber Harvest Plans (THPs) please refer to the "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf

18 NAD83, NAD27 or WGS84

19 http://www.dfg.ca.gov/biogeodata

20 NAD83, NAD27 or WGS84

21 http://www.dfg.ca.gov/biogeodata/vegcamp/veg_publications_protocols.asp

be conducted in a manner that is consistent with conservation ethics, and is in accordance with applicable state and federal permit requirements (e.g. incidental take permit, scientific collection permit). Voucher collections of special status species (or suspected special status species) should be made only when such actions would not jeopardize the continued existence of the population or species.

Deposit voucher specimens with an indexed regional herbarium[22] no later than 60 days after the collections have been made. Digital imagery can be used to supplement plant identification and document habitat. Record all relevant permittee names and permit numbers on specimen labels. A collecting permit is required prior to the collection of State-listed plant species[23].

BOTANICAL SURVEY REPORTS

Include reports of botanical field surveys containing the following information with project environmental documents:

- **Project and site description**
  - A description of the proposed project;
  - A detailed map of the project location and study area that identifies topographic and landscape features and includes a north arrow and bar scale; and,
  - A written description of the biological setting, including vegetation[24] and structure of the vegetation; geological and hydrological characteristics; and land use or management history.
- **Detailed description of survey methodology and results**
  - Dates of field surveys (indicating which areas were surveyed on which dates), name of field investigator(s), and total person-hours spent on field surveys;
  - A discussion of how the timing of the surveys affects the comprehensiveness of the survey;
  - A list of potential special status species or natural communities;
  - A description of the area surveyed relative to the project area;
  - References cited, persons contacted, and herbaria visited;
  - Description of reference site(s), if visited, and phenological development of special status plant(s);
  - A list of all taxa occurring on the project site. Identify plants to the taxonomic level necessary to determine whether or not they are a special status species;
  - Any use of existing surveys and a discussion of applicability to this project;
  - A discussion of the potential for a false negative survey;
  - Provide detailed data and maps for all special plants detected. Information specified above under the headings “Special Status Plant or Natural Community Observations,” and “Field Survey Forms,” should be provided for locations of each special status plant detected;
  - Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms should be sent to the CNDDB and included in the environmental document as an Appendix. It is not necessary to submit entire environmental documents to the CNDDB; and,
  - The location of voucher specimens, if collected.

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22 For a complete list of indexed herbaria, see: Holmgren, P., N. Holmgren and L. Barnett. 1990. Index Herbariorum, Part 1: Herbaria of the World. New York Botanic Garden, Bronx, New York. 693 pp. Or: http://www.nybg.org/bsci/ih/ih.html

23 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

24 A vegetation map that uses the National Vegetation Classification System (http://biology.usgs.gov/npsveg/nvcs.html), for example *A Manual of California Vegetation*, and highlights any special status natural communities. If another vegetation classification system is used, the report should reference the system, provide the reason for its use, and provide a crosswalk to the National Vegetation Classification System.

- **Assessment of potential impacts**
  - A discussion of the significance of special status plant populations in the project area considering nearby populations and total species distribution;
  - A discussion of the significance of special status natural communities in the project area considering nearby occurrences and natural community distribution;
  - A discussion of direct, indirect, and cumulative impacts to the plants and natural communities;
  - A discussion of threats, including those from invasive species, to the plants and natural communities;
  - A discussion of the degree of impact, if any, of the proposed project on unoccupied, potential habitat of the species;
  - A discussion of the immediacy of potential impacts; and,
  - Recommended measures to avoid, minimize, or mitigate impacts.

QUALIFICATIONS

Botanical consultants should possess the following qualifications:

- Knowledge of plant taxonomy and natural community ecology;
- Familiarity with the plants of the area, including special status species;
- Familiarity with natural communities of the area, including special status natural communities;
- Experience conducting floristic field surveys or experience with floristic surveys conducted under the direction of an experienced surveyor;
- Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
- Experience with analyzing impacts of development on native plant species and natural communities.

SUGGESTED REFERENCES

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Attachment B

ARCADIS Design & Consultancy for natural and built assets

Imagine the result

MPL Property Holdings LLC

North Shore at Mandalay Bay McGrath Parcel Restoration Year 6 (2014) Mitigation Monitoring Report

Ventura County, California

South Coast Branching Phacelia (*Phacelia ramosissima* var. *austrolittoralis*)

South Coast branching phacelia is an herbaceous perennial in the Borage Family (Boraginaceae) that produces elongate spreading stems and alternate leaves divided into leaflets bearing scalloped margins and many stiff, bulb-based hairs. The rounded pale lavender flowers are produced on coiled inflorescences in late spring and summer, with five fused petals comprising bell-shaped corollas.

South Coast branching phacelia is scattered in southern dune scrub and slopes transitional to wetlands at the Site, and is also found in coastal scrub, chaparral, and wetland habitats from Santa Barbara County south to San Diego County. It is categorized as CNPS 4.2, a plant of limited distribution that is fairly endangered in California and is occasionally found at the upland margins of wetland areas. According to the CNPS website, the plants in the List 4 category are of limited distribution or infrequent throughout a broader area in California, and their vulnerability or susceptibility to threat appears relatively low at this time. CNPS does not consider these plants "rare" from a statewide perspective, but they are uncommon enough that their status should be monitored regularly.

Presence on the Site: South Coast branching phacelia is scattered on the dunes at the Site, especially near the base of the dunes in moist transition areas among other shrubs.

Beach Saltbush (*Atriplex leucophylla*)

Beach saltbush is a low spreading perennial herb in the Goosefoot Family (*Chenopodiaceae*) that is somewhat woody at the base. The rounded alternately-placed leaves are whitish and rough to the touch. Flowers appear among the leaves and at branch tips in spring and summer.

Beach saltbush occurs in coastal strand vegetation, as well as on bluffs and the edges of saltmarshes, from Humboldt County south to Baja California. It is included on the Ventura County Locally Important Plants List (2012).

Presence on the Site: Beach saltbush is uncommon on Site, only noted in a couple of locations in the Dune Preservation Areas in coastal dune vegetation.

8.3 Sensitive Wildlife

One state and/or federally listed threatened or endangered wildlife species was observed during ARCADIS' survey; the Least Bell's vireo. In addition, the Site provides suitable habitat for several

other sensitive wildlife species including, but not limited to, the western burrowing owl and silvery legless lizard.

Some of the sensitive species listed in the CNDDB (CDFW 2014) for Oxnard and the surrounding areas are not discussed below due to the lack of species-specific habitat requirements present on the Site. Species such as the southern steelhead (*Oncorhynchus mykiss irideus*) and Santa Ana sucker (*Catostomus santaanae*) are examples of species whose habitat requirements are not met by the existing conditions on the Site.

Raptor species likely to utilize the Site on a consistent basis for foraging include the red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), great horned owl (*Bubo virginianus*), barn owl (*Tyto alba*), red-shouldered hawk (*Buteo lineatus*), and American kestrel (*Falco sparvarious*). Raptors such as the white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), merlin (*Falco columbarius*), peregrine falcon, sharp-shinned hawk (*Accipiter striatus*), and loggerhead shrike may also occur inconsistently or seasonally on the Site. All raptors and their active nests are protected under the California Fish and Game Code (Section 3503.5) and the federal Migratory Bird Treaty Act (MBTA).

All birds included on the federal list of migratory non-game birds, and their active nests, are protected by law under the federal MBTA. This includes all of the birds observed on the Site by ARCADIS and listed in Appendix B, with the exception of the European starling (*Sturnus vulgaris*).

In addition to the sensitive and rare species addressed below, it is important to consider that the Site also provides foraging, breeding, and dispersal habitat for a large number of common wildlife species. While these species are not given the same legal protection as those species classified as sensitive or rare, they play an integral role both as individual species and collectively in the functional value of the existing ecosystem at the Site. Species such as the Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Spermophilus beecheyi*), California vole (*Microtus californicus*), long-tailed weasel (*Mustela frenata*), striped skunk (*Mephitis mephitis*), common gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), western fence lizard (*Sceloporus occidentalis*) and side-blotched lizard (*Uta stansburiana*), southern alligator lizard (*Elgaria multicarinata*), gopher snake (*Pituophis melanoleucus*), common king snake (*Lampropeltis getulus*), striped racer (*Masticophis lateralis*), coachwhip snake (*Masticophis flagellum*), Pacific treefrog (*Hyla regilla*), western toad (*Bufo boreas*), and numerous butterfly species and untold numbers of other invertebrates are examples of common organisms that occur on the Site. In addition to protecting the sensitive and listed species, every effort is made where feasible to protect and promote the ability of the Site to continue to support the diversity of common wildlife species currently occurring there. The Site is considered invaluable to wildlife in the area because it provides habitat and also serves as a dispersal corridor between adjacent inland and coastal

locations and allows access to different habitat types in the area. The vegetation composition and structure on the Site provides critical food, cover, and living space for both resident and migrating bird species, mammals, reptiles, amphibians, and invertebrates.

The species accounts below represent state or federally listed or otherwise sensitive wildlife species known from the Oxnard area or neighboring areas that are known to occur or potentially occur on the Site. The list does not include sensitive species that are known to occur in the Site vicinity but would be considered unlikely to spend prolonged periods of time on the Site. The sensitivity status of each species is provided through the use of codes, defined as the following:

United States Fish and Wildlife Service

FE – Federally Endangered

FT – Federally Threatened

FSC – Federal Special Concern Species

California Department of Fish and Game

CE – California Endangered

CT – California Threatened

CSC – California Species of Concern

8.3.1 Observed and Potentially Occurring Sensitive Wildlife Species

Least Bell's vireo (Vireo bellii spp. pusillus)

Least Bell's vireo (FE/CE) is a migratory passerine that typically arrives on the Central California coast from Mexico in early April, and departs by late August (Lehman, 1982). This species prefers to nest in extensive, multi-canopy, riparian corridors, especially those dominated by willow and/or cottonwood trees. A normal clutch consists of four eggs incubated for two weeks, with young fledging in 10-12 days (Franzreb, 1987b). Parasitism by the brown-headed cowbird and loss of riparian habitat are thought to be the major reasons for the decline of this species.

Presence on the Site: A single least Bell's vireo was observed by an ARCADIS biologist while conducting routine avian surveys at the Site on August 21, 2014. Limited and only marginally suitable nesting habitat for the least Bell's vireo exists on the Site. However, the Site provides suitable foraging habitat for this species. The least Bell's vireo is known to breed nearby in riparian habitat along the Santa Clara River. A singing male least Bell's vireo was documented in willow and

myoporum dominated habitat directly across West 5th Street from the southeast corner of the North Shore restoration area in July 2009.

Silvery Legless Lizard (*Anniella pulchra pulchra*)

The silvery legless lizard (FSC/CSC) is a pencil-sized fossorial species reaching a length of approximately 7 inches (18 cm) and spending much of its time in underground burrows. This lizard is found in loose loamy or sandy soil with patchy shrub cover, and frequents chaparral, coastal scrub, pine-oak woodland, and streamside growth of sycamores, cottonwoods, and oaks. The silvery legless lizard favors the loose litter under sycamore, oak, and cottonwood trees. The silvery legless lizard bears live young and typically one to four young are born in the fall. The diet of the silvery legless lizard consists primarily of insects and spiders (Stebbins 1985).

Presence on the Site: Silvery legless lizards have not been observed at the Site during ARCADIS' surveys; however, individuals have been observed at the Site by others on several occasions (Impact Sciences 2007). CIR encountered a silvery legless lizard at the Site while conducting hand removal of weeds in May 2012. In addition, silvery legless lizards that had been found during construction activities at the Mandalay Bay North Shore site were released into favorable habitat at the McGrath Parcel (Impact Sciences 2007). Suitable habitat on Site that could support silvery legless lizards include coastal dune scrub habitat, with sandy soil in association with low shrub cover; adjacent habitat dominated by shrubs with loose leaf litter in the vicinity, and adjacent wetter habitats during periods of dryer weather or drought; the Site has excellent habitat for the silvery legless lizard.

Two-striped Garter Snake (*Thamnophis hammondii*)

The two-striped garter snake (-/CSC) is olive, brown, or brownish gray above, with four lengthwise rows of small, well-separated dark spots between the lateral stripes, or dark spots confined to the lower sides. This snake has no red flecks on its sides. It is dull yellowish to orange-red salmon below, either unmarked or slightly marked with dusky. The two-striped garter snake attains a length of up to 36 inches.

The two-striped garter snake is a highly aquatic species found in or near permanent fresh water, often along streams with rocky beds bordered by willows or other streamside growth. It may also utilize upland habitat on occasion. It is most active at dusk or at night but may be encountered in the daytime. This snake feeds on tadpoles, toads, frogs, fish, fish eggs, small mammals, and earth-worms. It is a live-bearing snake species and from four to 36 young are born in summer (Stebbins 1985).

Presence on the Site: CIR observed and photographed the two-striped garter snake while conducting invasive weed removal work at the McGrath Parcel. Existing habitat at the McGrath Parcel is considered good to excellent for the two-striped garter snake.

Western Burrowing Owl (*Athene cunicularia hypugaea*)

The burrowing owl (SC/CSC) inhabits open country of grasslands, prairies, and fields. It often uses the burrows of ground squirrels and other small mammal species for shelter and nesting. It is generally a nocturnal raptor, but can be observed roosting outside of burrow entrances during the day. The burrowing owl feeds mainly on insects, small mammals, birds, and reptiles. Adult burrowing owls are heavily barred and spotted, while the juveniles show more of a contiguous buffy pattern below. Six to 11 eggs are incubated by both male and female adult owls, and the young fledge approximately 28 days after hatching from the egg. The burrowing owls' long legs are unique in comparison to other owls of its size.

Presence on the Site: A burrowing owl was observed during ARCADIS' survey in winter 2009/2010, and burrowing owls were also observed wintering at the McGrath Parcel in winter 2006-2007 (Impact Sciences 2007). Two burrowing owls overwintered at the North Shore at Mandalay Bay Site in 2011, 2012, and 2013. The Site has suitable habitat for the western burrowing owl, including numerous California ground squirrel burrows. Burrowing owls have not been observed during spring and are not expected to breed on the Site.

White-tailed Kite (*Elanus leucurus*)

The white-tailed kite (-/CSC; "Fully Protected") depends upon relatively undisturbed oak woodland, grassland, and/or coastal sage scrub habitat for successful breeding. Small mammals are the normal prey item of this species. Three to six eggs are laid as early as mid-March and as late as the end of May. Young fledge approximately 35 to 40 days after hatching. White-tailed kite habitat often has a stretch of riparian corridor in which to nest (particularly cottonwoods, but including eucalyptus, willows, and live oaks), and adjacent open fields in which to hunt. Nests are usually well hidden in the tree canopy (Dixon et al. 1957).

Presence on the Site: White-tailed kites have been observed on the Site by ARCADIS and on property surrounding the Site. One white-tailed kite was observed foraging at the nearby North Shore at Mandalay Bay Site in March of 2012 and the species was observed at the McGrath Parcel in June of 2012. Kites favor the open terrain of grassland, oak woodland, and coastal scrub. The Site provides good foraging habitat for the white-tailed kite.

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike (FSC/CSC) is found in dry open habitat types, including the grassland/chaparral interface. The loggerhead shrike is known for its habit of impaling prey items such as lizards, small mice, and large insects on the spines of thorn bushes or on barbed wire fencing. It generally hunts from low perches such as fence posts, wires, and the tops of low bushes. Shrikes lay five to six eggs in an open cup-shaped nest, well hidden in the crotch of a tree branch. Egg laying commonly begins in April and young fledge in about 34 days (Ehrlich et al. 1988).

Presence on the Site: Impact Sciences observed a loggerhead shrike on the Site in 2004 and the species was observed at the North Shore at Mandalay Bay Site in 2011 by ARCADIS. The Site has suitable foraging and nesting habitat for the loggerhead shrike.

Cooper's Hawk (*Accipiter cooperii*)

The Cooper's hawk (-/CSC) is a crow-sized raptor with relatively short-rounded wings and a long barred tail. It feeds predominantly on small to medium-sized birds, but will also take mammals such as wood rats, small rabbits, and reptiles. The breeding season for the Cooper's hawk begins in mid-March to early April. Nests are typically built in the upper canopy of a dense stand of trees such as live oak or cottonwood. Nests are occasionally built atop a wood rat or squirrel nest (Meng and Rosenfield 1988 *in* Roberson and Tenney 1993). The Cooper's hawk is generally considered a secretive species, but commonly breeds within urban settings.

Presence on the Site: The Cooper's hawk has been observed on the Site during ARCADIS surveys and is observed regularly at the North Shore at Mandalay Bay Site. The Site offers excellent foraging habitat for the Cooper's hawk. The Cooper's hawk is expected to utilize the Site for foraging purposes on a year-round basis and may nest near the Site.

California Horned Lark (*Eremophila alpestris* subsp. *actia*)

The California horned lark (-/CSC) is a widespread passerine that is found throughout the United States. It is a ground-nesting bird typically observed in open terrain such as grassland, tundra, and agricultural fields. Farming operations are thought to be responsible for the destruction of many horned lark nests. This species can be found throughout the year on the Central Coast. The California horned lark is a short grass specialist whose populations, unlike those of most species,

Attachment C

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: EOndx IS (63861)

Map Index Number:	63766	**EO Index:**	63861
Key Quad:	Oxnard (3411922)	**Element Code:**	ARACC01012
Occurrence Number:	35	**Occurrence Last Updated:**	2017-05-12

Scientific Name: *Anniella pulchra pulchra* **Common Name:** silvery legless lizard

Listing Status: **Federal:** None

State: None

Rare Plant Rank:

Other Lists: CDFW_SSC-Species of Special Concern
USFS_S-Sensitive

CNDDB Element Ranks: **Global:** G3G4T3T4Q

State: S3

General Habitat:

SANDY OR LOOSE LOAMY SOILS UNDER SPARSE VEGETATION.

Micro Habitat:

SOIL MOISTURE IS ESSENTIAL. THEY PREFER SOILS WITH A HIGH MOISTURE CONTENT.

Last Date Observed:	2017-05-05	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2017-05-05	**Occurrence Rank:**	Fair
Owner/Manager:	PVT, DPR	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

VICINITY OF MCGRATH LAKE & LAND TO S AND E; W SIDE OF HARBOR BLVD FROM 0.9-1.1 MI NW OF W 5TH ST INTXN; WNW OF OXNARD.

Detailed Location:

1949 SPECIMEN FROM "LAKE MCGRATH;" 2002 FROM STATE BEACH, "APPROX 0.5 AIR MI NW JUNCTION HARBOR BLVD & W 5TH ST"; EXACT LOCATIONS UNKNOWN. MAPPED TO COORDS GIVEN FOR 2004 & 2017 DETECTIONS ON PRIVATE PROPERTY S & SE OF MCGRATH STATE BEACH.

Ecological:

2002: UNPAVED ROAD IN LOW DUNES W/ERIOGONUM & SCIRPUS. 2004: DEGRADED DUNE HABITAT. 2017: REMNANT SAND DUNES; SURROUNDING LAND USES HABITAT RESTORATION, OPEN SPACE, INDUSTRIAL; DETECTION LOCATION SITE PROPOSED FOR POWER PLANT DEVELOPMENT.

Threats:

ROAD TRAFFIC (2002). PROPOSED DEVELOPMENT (2017).

General:

1 COLLECTED ON 18 JUN 1949. 1 OBSERVED IN 1983. 1 FOUND DEAD ON ROAD ON 2 MAR 2002. 1 ADULT OBSERVED ON 10 OCT 2004. 2 ADULTS DETECTED DURING 1.5 HOURS OF RAKING SURVEY ON 5 MAY 2017.

PLSS:	T02N, R23W, Sec. 36, SW (S)	**Accuracy:**	specific area	**Area (acres):**	15
UTM:	Zone-11 N3787593 E292662	**Latitude/Longitude:**	34.20876 / -119.25049	**Elevation (feet):**	15

County Summary:	**Quad Summary:**
Ventura	Oxnard (3411922)

Sources:

FOR04F0002	FORDE, A.M. (FORDE BIOLOGICAL CONSULTANTS) - FIELD SURVEY FORM FOR ANNIELLA PULCHRA PULCHRA 2004-10-07
MUN02S0001	MUNRO, P. ET AL. - CCBER #30787 COLLECTED FROM OXNARD PLAIN, OXNARD BEACH MCGRATH STATE BEACH, COASTAL DUNES APPROX. 0.5 AIR MI. NW JUNCTION HARBOR BLVD. AND W 5TH ST. 2002-03-02
SAN49S0003	SANDERS, R. - CAS-SU #12998 COLLECTED FROM LAKE MCGRATH, 5.8 MI W OF OXNARD. 1949-06-18
TRA17F0001	TRAUTWEIN, B. - FIELD SURVEY FORM FOR ANNIELLA PULCHRA PULCHRA 2017-05-05
TRA17F0002	TRAUTWEIN, B. - FIELD SURVEY FORM FOR ANNIELLA PULCHRA PULCHRA 2017-05-05
USFNDD0002	U.S. FOREST SERVICE-REGION 5 - NATURAL RESOURCE INFORMATION SYSTEM (NRIS) ANIMAL RECORDS FROM CALIFORNIA NATIONAL FORESTS XXXX-XX-XX

Attachment D

Staff Report on Burrowing Owl Mitigation

State of California

Natural Resources Agency

Department of Fish and Game

March 7, 2012[1]

[1] This document replaces the Department of Fish and Game 1995 Staff Report On Burrowing Owl Mitigation.

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INTRODUCTION AND PURPOSE

Maintaining California's rich biological diversity is dependent on the conservation of species and their habitats. The California Department of Fish and Game (Department) has designated certain species as "species of special concern" when their population viability and survival is adversely affected by risk factors such as precipitous declines or other vulnerability factors (Shuford and Gardali 2008). Preliminary analyses of regional patterns for breeding populations of burrowing owls (*Athene cunicularia*) have detected declines both locally in their central and southern coastal breeding areas, and statewide where the species has experienced modest breeding range retraction (Gervais et al. 2008). In California, threat factors affecting burrowing owl populations include habitat loss, degradation and modification, and eradication of ground squirrels resulting in a loss of suitable burrows required by burrowing owls for nesting, protection from predators, and shelter (See Appendix A).

The Department recognized the need for a comprehensive conservation and mitigation strategy for burrowing owls, and in 1995 directed staff to prepare a report describing mitigation and survey recommendations. This report, "1995 Staff Report on Burrowing Owl Mitigation," (Staff Report) (CDFG 1995), contained Department-recommended burrowing owl and burrow survey techniques and mitigation measures intended to offset the loss of habitat and slow or reverse further decline of this species. Notwithstanding these measures, over the past 15+ years, burrowing owls have continued to decline in portions of their range (DeSante et al. 2007, Wilkerson and Siegel, 2010). The Department has determined that reversing declining population and range trends for burrowing owls will require implementation of more effective conservation actions, and evaluating the efficacy of the Department's existing recommended avoidance, minimization and mitigation approaches for burrowing owls.

The Department has identified three main actions that together will facilitate a more viable, coordinated, and concerted approach to conservation and mitigation for burrowing owls in California. These include:

1. Incorporating burrowing owl comprehensive conservation strategies into landscape-based planning efforts such as Natural Community Conservation Plans (NCCPs) and multi-species Habitat Conservation Plans (HCPs) that specifically address burrowing owls.
2. Developing and implementing a statewide conservation strategy (Burkett and Johnson, 2007) and local or regional conservation strategies for burrowing owls, including the development and implementation of a statewide burrowing owl survey and monitoring plan.
3. Developing more rigorous burrowing owl survey methods, working to improve the adequacy of impacts assessments; developing clear and effective avoidance and minimization measures; and developing mitigation measures to ensure impacts to the species are effectively addressed at the project, local, and/or regional level (the focus of this document).

This Report sets forth the Department's recommendations for implementing the third approach identified above by revising the 1995 Staff Report, drawing from the most relevant and current knowledge and expertise, and incorporating the best scientific information

available pertaining to the species. It is designed to provide a compilation of the best available science for Department staff, biologists, planners, land managers, California Environmental Quality Act (CEQA) lead agencies, and the public to consider when assessing impacts of projects or other activities on burrowing owls.

This revised Staff Report takes into account the California Burrowing Owl Consortium's Survey Protocol and Mitigation Guidelines (CBOC 1993, 1997) and supersedes the survey, avoidance, minimization and mitigation recommendations in the 1995 Staff Report. Based on experiences gained from implementing the 1995 Staff Report, the Department believes revising that report is warranted. This document also includes general conservation goals and principles for developing mitigation measures for burrowing owls.

DEPARTMENT ROLE AND LEGAL AUTHORITIES

The mission of the Department is to manage California's diverse fish, wildlife and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitats necessary to maintain biologically sustainable populations of those species (Fish and Game Code (FGC) §1802). The Department, as trustee agency pursuant to CEQA (See CEQA Guidelines, §15386), has jurisdiction by law over natural resources, including fish and wildlife, affected by a project, as that term is defined in Section 21065 of the Public Resources Code. The Department exercises this authority by reviewing and commenting on environmental documents and making recommendations to avoid, minimize, and mitigate potential negative impacts to those resources held in trust for the people of California.

Field surveys designed to detect the presence of a particular species, habitat element, or natural community are one of the tools that can assist biologists in determining whether a species or habitat may be significantly impacted by land use changes or disturbance. The Department reviews field survey data as well as site-specific and regional information to evaluate whether a project's impacts may be significant. This document compiles the best available science for conducting habitat assessments and surveys, and includes considerations for developing measures to avoid impacts or mitigate unavoidable impacts.

CEQA

CEQA requires public agencies in California to analyze and disclose potential environmental impacts associated with a project that the agency will carry out, fund, or approve. Any potentially significant impact must be mitigated to the extent feasible. Project-specific CEQA mitigation is important for burrowing owls because most populations exist on privately owned parcels that, when proposed for development or other types of modification, may be subject to the environmental review requirements of CEQA.

Take

Take of individual burrowing owls and their nests is defined by FGC section 86, and prohibited by sections 3503, 3503.5 and 3513. Take is defined in FGC Section 86 as "hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture or kill."

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the United States and Canada, Japan, Mexico, and Russia for the protection of migratory birds, including the burrowing owl (50 C.F.R. § 10). The MBTA protects migratory bird nests from possession, sale, purchase, barter, transport, import and export, and collection. The other prohibitions of the MBTA - capture, pursue, hunt, and kill - are inapplicable to nests. The regulatory definition of take, as defined in Title 50 C.F.R. part 10.12, means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect. Only the verb "collect" applies to nests. It is illegal to collect, possess, and by any means transfer possession of any migratory bird nest. The MBTA prohibits the destruction of a nest when it contains birds or eggs, and no possession shall occur during the destruction (see Fish and Wildlife Service, Migratory Bird Permit Memorandum, April 15, 2003). Certain exceptions to this prohibition are included in 50 C.F.R. section 21. Pursuant to Fish & Game Code section 3513, the Department enforces the Migratory Bird Treaty Act consistent with rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.

Regional Conservation Plans

Regional multiple species conservation plans offer long-term assurances for conservation of covered species at a landscape scale, in exchange for biologically appropriate levels of incidental take and/or habitat loss as defined in the approved plan. California's NCCP Act (FGC §2800 et seq.) governs such plans at the state level, and was designed to conserve species, natural communities, ecosystems, and ecological processes across a jurisdiction or a collection of jurisdictions. Complementary federal HCPs are governed by the Endangered Species Act (7 U.S.C. § 136, 16 U.S.C.§ 1531 et seq.) (ESA). Regional conservation plans (and certain other landscape-level conservation and management plans), may provide conservation for unlisted as well as listed species. Because the geographic scope of NCCPs and HCPs may span many hundreds of thousands of acres, these planning tools have the potential to play a significant role in conservation of burrowing owls, and grasslands and other habitats.

Fish and Game Commission Policies

There are a number of Fish and Game Commission policies (see FGC §2008) that can be applied to burrowing owl conservation. These include policies on: Raptors, Cooperation, Endangered and Threatened Species, Land Use Planning, Management and Utilization of Fish and Wildlife on Federal Lands, Management and Utilization of Fish and Wildlife on Private Lands, and Research.

GUIDING PRINCIPLES FOR CONSERVATION

Unless otherwise provided in a statewide, local, or regional conservation strategy, surveying and evaluating impacts to burrowing owls, as well as developing and implementing avoidance, minimization, and mitigation and conservation measures incorporate the following principles. These principles are a summary of Department staff expert opinion and were used to guide the preparation of this document.

1. Use the Precautionary Principle (Noss et al.1997), by which the alternative of increased conservation is deliberately chosen in order to buffer against incomplete knowledge of burrowing owl ecology and uncertainty about the consequences to burrowing owls of potential impacts, including those that are cumulative.
2. Employ basic conservation biology tenets and population-level approaches when determining what constitutes appropriate avoidance, minimization, and mitigation for impacts. Include mitigation effectiveness monitoring and reporting, and use an adaptive management loop to modify measures based on results.
3. Protect and conserve owls in wild, semi-natural, and agricultural habitats (conserve is defined at FGC §1802).
4. Protect and conserve natural nest burrows (or burrow surrogates) previously used by burrowing owls and sufficient foraging habitat and protect auxiliary "satellite" burrows that contribute to burrowing owl survivorship and natural behavior of owls.

CONSERVATION GOALS FOR THE BURROWING OWL IN CALIFORNIA

It is Department staff expert opinion that the following goals guide and contribute to the short and long-term conservation of burrowing owls in California:

1. Maintain size and distribution of extant burrowing owl populations (allowing for natural population fluctuations).
2. Increase geographic distribution of burrowing owls into formerly occupied historical range where burrowing owl habitat still exists, or where it can be created or enhanced, and where the reason for its local disappearance is no longer of concern.
3. Increase size of existing populations where possible and appropriate (for example, considering basic ecological principles such as carrying capacity, predator-prey relationships, and inter-specific relationships with other species at risk).
4. Protect and restore self-sustaining ecosystems or natural communities which can support burrowing owls at a landscape scale, and which will require minimal long-term management.
5. Minimize or prevent unnatural causes of burrowing owl population declines (e.g., nest burrow destruction, chemical control of rodent hosts and prey).
6. Augment/restore natural dynamics of burrowing owl populations including movement and genetic exchange among populations, such that the species does not require future listing and protection under the California Endangered Species Act (CESA) and/or the federal Endangered Species Act (ESA).
7. Engage stakeholders, including ranchers; farmers; military; tribes; local, state, and federal agencies; non-governmental organizations; and scientific research and education communities involved in burrowing owl protection and habitat management.

ACTIVITIES WITH THE POTENTIAL TO TAKE OR IMPACT BURROWING OWLS

The following activities are examples of activities that have the potential to take burrowing owls, their nests or eggs, or destroy or degrade burrowing owl habitat: grading, disking, cultivation, earthmoving, burrow blockage, heavy equipment compacting and crushing burrow tunnels, levee maintenance, flooding, burning and mowing (if burrows are impacted), and operating wind turbine collisions (collectively hereafter referred to as "projects" or "activities"

whether carried out pursuant to CEQA or not). In addition, the following activities may have impacts to burrowing owl populations: eradication of host burrowers; changes in vegetation management (i.e. grazing); use of pesticides and rodenticides; destruction, conversion or degradation of nesting, foraging, over-wintering or other habitats; destruction of natural burrows and burrow surrogates; and disturbance which may result in harassment of owls at occupied burrows.

PROJECT IMPACT EVALUATIONS

The following three progressive steps are effective in evaluating whether projects will result in impacts to burrowing owls. The information gained from these steps will inform any subsequent avoidance, minimization and mitigation measures. The steps for project impact evaluations are: 1) habitat assessment, 2) surveys, and 3) impact assessment. Habitat assessments are conducted to evaluate the likelihood that a site supports burrowing owl. Burrowing owl surveys provide information needed to determine the potential effects of proposed projects and activities on burrowing owls, and to avoid take in accordance with FGC sections 86, 3503, and 3503.5. Impact assessments evaluate the extent to which burrowing owls and their habitat may be impacted, directly or indirectly, on and within a reasonable distance of a proposed CEQA project activity or non-CEQA project. These three site evaluation steps are discussed in detail below.

Biologist Qualifications

The current scientific literature indicates that only individuals meeting the following minimum qualifications should perform burrowing owl habitat assessments, surveys, and impact assessments:

1. Familiarity with the species and its local ecology;
2. Experience conducting habitat assessments and non-breeding and breeding season surveys, or experience with these surveys conducted under the direction of an experienced surveyor;
3. Familiarity with the appropriate state and federal statutes related to burrowing owls, scientific research, and conservation;
4. Experience with analyzing impacts of development on burrowing owls and their habitat.

Habitat Assessment Data Collection and Reporting

A habitat assessment is the first step in the evaluation process and will assist investigators in determining whether or not occupancy surveys are needed. Refer to Appendix B for a definition of burrowing owl habitat. Compile the detailed information described in Appendix C when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report.

Surveys

Burrowing owl surveys are the second step of the evaluation process and the best available scientific literature recommends that they be conducted whenever burrowing owl habitat or sign (see Appendix B) is encountered on or adjacent to (within 150 meters) a project site

(Thomsen 1971, Martin 1973). Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (Rich 1984). Burrowing owls are more detectable during the breeding season with detection probabilities being highest during the nestling stage (Conway et al. 2008). In California, the burrowing owl breeding season extends from 1 February to 31 August (Haug et al. 1993, Thompsen 1971) with some variances by geographic location and climatic conditions. Several researchers suggest three or more survey visits during daylight hours (Haug and Diduik 1993, CBOC 1997, Conway and Simon 2003) and recommend each visit occur at least three weeks apart during the peak of the breeding season, commonly accepted in California as between 15 April and 15 July (CBOC 1997). Conway and Simon (2003) and Conway et al. (2008) recommended conducting surveys during the day when most burrowing owls in a local area are in the laying and incubation period (so as not to miss early breeding attempts), during the nesting period, and in the late nestling period when most owls are spending time above ground.

Non-breeding season (1 September to 31 January) surveys may provide information on burrowing owl occupancy, but do not substitute for breeding season surveys because results are typically inconclusive. Burrowing owls are more difficult to detect during the non-breeding season and their seasonal residency status is difficult to ascertain. Burrowing owls detected during non-breeding season surveys may be year-round residents, young from the previous breeding season, pre-breeding territorial adults, winter residents, dispersing juveniles, migrants, transients or new colonizers. In addition, the numbers of owls and their pattern of distribution may differ during winter and breeding seasons. However, on rare occasions, non-breeding season surveys may be warranted (i.e., if the site is believed to be a wintering site only based on negative breeding season results). Refer to Appendix D for information on breeding season and non-breeding season survey methodologies.

Survey Reports

Adequate information about burrowing owls present in and adjacent to an area that will be disturbed by a project or activity will enable the Department, reviewing agencies and the public to effectively assess potential impacts and will guide the development of avoidance, minimization, and mitigation measures. The survey report includes but is not limited to a description of the proposed project or proposed activity, including the proposed project start and end dates, as well as a description of disturbances or other activities occurring on-site or nearby. Refer to Appendix D for details included in a survey report.

Impact Assessment

The third step in the evaluation process is the impact assessment. When surveys confirm occupied burrowing owl habitat in or adjoining the project area, there are a number of ways to assess a project's potential significant impacts to burrowing owls and their habitat. Richardson and Miller (1997) recommended monitoring raptor behavior prior to developing management recommendations and buffers to determine the extent to which individuals have been sensitized to human disturbance. Monitoring results will also provide detail necessary for developing site-specific measures. Postovit and Postovit (1987) recommended an analytical approach to mitigation planning: define the problem (impact), set goals (to guide mitigation development), evaluate and select mitigation methods, and monitor the results.

Define the problem. The impact assessment evaluates all factors that could affect burrowing owls. Postovit and Postovit (1987) recommend evaluating the following in assessing impacts to raptors and planning mitigation: type and extent of disturbance, duration and timing of disturbance, visibility of disturbance, sensitivity and ability to habituate, and influence of environmental factors. They suggest identifying and addressing all potential direct and indirect impacts to burrowing owls, regardless of whether or not the impacts will occur during the breeding season. Several examples are given for each impact category below; however, examples are not intended to be used exclusively.

Type and extent of the disturbance. The impact assessment describes the nature (source) and extent (scale) of potential project impacts on occupied, satellite and unoccupied burrows including acreage to be lost (temporary or permanent), fragmentation/edge being created, increased distance to other nesting and foraging habitat, and habitat degradation. Discuss any project activities that impact either breeding and/or non-breeding habitat which could affect owl home range size and spatial configuration, negatively affect onsite and offsite burrowing owl presence, increase energetic costs, lower reproductive success, increase vulnerability to predation, and/or decrease the chance of procuring a mate.

Duration and timing of the impact. The impact assessment describes the amount of time the burrowing owl habitat will be unavailable to burrowing owls (temporary or permanent) on the site and the effect of that loss on essential behaviors or life history requirements of burrowing owls, the overlap of project activities with breeding and/or non-breeding seasons (timing of nesting and/or non-breeding activities may vary with latitude and climatic conditions, which should be considered with the timeline of the project or activity), and any variance of the project activities in intensity, scale and proximity relative to burrowing owl occurrences.

Visibility and sensitivity. Some individual burrowing owls or pairs are more sensitive than others to specific stimuli and may habituate to ongoing visual or audible disturbance. Site-specific monitoring may provide clues to the burrowing owl's sensitivities. This type of assessment addresses the sensitivity of burrowing owls within their nesting area to humans on foot, and vehicular traffic. Other variables are whether the site is primarily in a rural versus urban setting, and whether any prior disturbance (e.g., human development or recreation) is known at the site.

Environmental factors. The impact assessment discusses any environmental factors that could be influenced or changed by the proposed activities including nest site availability, predators, prey availability, burrowing mammal presence and abundance, and threats from other extrinsic factors such as human disturbance, urban interface, feral animals, invasive species, disease or pesticides.

Significance of impacts. The impact assessment evaluates the potential loss of nesting burrows, satellite burrows, foraging habitat, dispersal and migration habitat, wintering habitat, and habitat linkages, including habitat supporting prey and host burrowers and other essential habitat attributes. This assessment determines if impacts to the species will result in significant impacts to the species locally, regionally and range-wide per CEQA Guidelines §15382 and Appendix G. The significance of the impact to habitat depends on the extent of habitat disturbed and length of time the habitat is unavailable (for example: minor – several days, medium – several weeks to months, high - breeding season affecting juvenile survival,

or over winter affecting adult survival).

Cumulative effects. The cumulative effects assessment evaluates two consequences: 1) the project's proportional share of reasonably foreseeable impacts on burrowing owls and habitat caused by the project or in combination with other projects and local influences having impacts on burrowing owls and habitat, and 2) the effects on the regional owl population resulting from the project's impacts to burrowing owls and habitat.

Mitigation goals. Establishing goals will assist in planning mitigation and selecting measures that function at a desired level. Goals also provide a standard by which to measure mitigation success. Unless specifically provided for through other FGC Sections or through specific regulations, take, possession or destruction of individual burrowing owls, their nests and eggs is prohibited under FGC sections 3503, 3503.5 and 3513. Therefore, a required goal for all project activities is to avoid take of burrowing owls. Under CEQA, goals would consist of measures that would avoid, minimize and mitigate impacts to a less than significant level. For individual projects, mitigation must be roughly proportional to the level of impacts, including cumulative impacts, in accordance with the provisions of CEQA (CEQA Guidelines, §§ 15126.4(a)(4)(B), 15064, 15065, and 16355). In order for mitigation measures to be effective, they must be specific, enforceable, and feasible actions that will improve environmental conditions. As set forth in more detail in Appendix A, the current scientific literature supports the conclusion that mitigation for permanent habitat loss necessitates replacement with an equivalent or greater habitat area for breeding, foraging, wintering, dispersal, presence of burrows, burrow surrogates, presence of fossorial mammal dens, well drained soils, and abundant and available prey within close proximity to the burrow.

MITIGATION METHODS

The current scientific literature indicates that any site-specific avoidance or mitigation measures developed should incorporate the best practices presented below or other practices confirmed by experts and the Department. The Department is available to assist in the development of site-specific avoidance and mitigation measures.

Avoiding. A primary goal is to design and implement projects to seasonally and spatially avoid negative impacts and disturbances that could result in take of burrowing owls, nests, or eggs. Other avoidance measures may include but not be limited to:

- Avoid disturbing occupied burrows during the nesting period, from 1 February through 31 August.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- Avoid direct destruction of burrows through chaining (dragging a heavy chain over an area to remove shrubs), disking, cultivation, and urban, industrial, or agricultural development.
- Develop and implement a worker awareness program to increase the on-site worker's recognition of and commitment to burrowing owl protection.
- Place visible markers near burrows to ensure that farm equipment and other machinery does not collapse burrows.
- Do not fumigate, use treated bait or other means of poisoning nuisance animals in areas where burrowing owls are known or suspected to occur (e.g., sites observed with nesting

owls, designated use areas).
- Restrict the use of treated grain to poison mammals to the months of January and February.

Take avoidance (pre-construction) surveys. Take avoidance surveys are intended to detect the presence of burrowing owls on a project site at a fixed period in time and inform necessary take avoidance actions. Take avoidance surveys may detect changes in owl presence such as colonizing owls that have recently moved onto the site, migrating owls, resident burrowing owls changing burrow use, or young of the year that are still present and have not dispersed. Refer to Appendix D for take avoidance survey methodology.

Site surveillance. Burrowing owls may attempt to colonize or re-colonize an area that will be impacted; thus, the current scientific literature indicates a need for ongoing surveillance at the project site during project activities is recommended. The surveillance frequency/effort should be sufficient to detect burrowing owls if they return. Subsequent to their new occupancy or return to the site, take avoidance measures should assure with a high degree of certainty that take of owls will not occur.

Minimizing. If burrowing owls and their habitat can be protected in place on or adjacent to a project site, the use of buffer zones, visual screens or other measures while project activities are occurring can minimize disturbance impacts. Conduct site-specific monitoring to inform development of buffers (see Visibility and sensitivity above). The following general guidelines for implementing buffers should be adjusted to address site-specific conditions using the impact assessment approach described above. The CEQA lead agency and/or project proponent is encouraged to consult with the Department and other burrowing owl experts for assistance in developing site-specific buffer zones and visual screens.

Buffers. Holroyd et al. (2001) identified a need to standardize management and disturbance mitigation guidelines. For instance, guidelines for mitigating impacts by petroleum industries on burrowing owls and other prairie species (Scobie and Faminow, 2000) may be used as a template for future mitigation guidelines (Holroyd et al. 2001). Scobie and Faminow (2000) developed guidelines for activities around occupied burrowing owl nests recommending buffers around low, medium, and high disturbance activities, respectively (see below).

Recommended restricted activity dates and setback distances by level of disturbance for burrowing owls (Scobie and Faminow 2000).

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Based on existing vegetation, human development, and land uses in an area, resource managers may decide to allow human development or resource extraction closer to these area/sites than recommended above. However, if it is decided to allow activities closer than

the setback distances recommended, a broad-scale, long-term, scientifically-rigorous monitoring program ensures that burrowing owls are not detrimentally affected by alternative approaches.

Other minimization measures include eliminating actions that reduce burrowing owl forage and burrowing surrogates (e.g. ground squirrel), or introduce/facilitate burrowing owl predators. Actions that could influence these factors include reducing livestock grazing rates and/or changing the timing or duration of grazing or vegetation management that could result in less suitable habitat.

Burrow exclusion and closure. Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls, or permanently exclude burrowing owls and close burrows after verifying burrows are empty by site monitoring and scoping. Exclusion in and of itself is not a take avoidance, minimization or mitigation method. Eviction of burrowing owls is a potentially significant impact under CEQA.

The long-term demographic consequences of these techniques have not been thoroughly evaluated, and the fate of evicted or excluded burrowing owls has not been systematically studied. Because burrowing owls are dependent on burrows at all times of the year for survival and/or reproduction, evicting them from nesting, roosting, and satellite burrows may lead to indirect impacts or take. Temporary or permanent closure of burrows may result in significant loss of burrows and habitat for reproduction and other life history requirements. Depending on the proximity and availability of alternate habitat, loss of access to burrows will likely result in varying levels of increased stress on burrowing owls and could depress reproduction, increase predation, increase energetic costs, and introduce risks posed by having to find and compete for available burrows. Therefore, exclusion and burrow closure are not recommended where they can be avoided. The current scientific literature indicates consideration of all possible avoidance and minimization measures before temporary or permanent exclusion and closure of burrows is implemented, in order to avoid take.

The results of a study by Trulio (1995) in California showed that burrowing owls passively displaced from their burrows were quickly attracted to adjacent artificial burrows at five of six passive relocation sites. The successful sites were all within 75 meters (m) of the destroyed burrow, a distance generally within a pair's territory. This researcher discouraged using passive relocation to artificial burrows as a mitigation measure for lost burrows without protection of adjacent foraging habitat. The study results indicated artificial burrows were used by evicted burrowing owls when they were approximately 50-100 m from the natural burrow (Thomsen 1971, Haug and Oliphant 1990). Locating artificial or natural burrows more than 100 m from the eviction burrow may greatly reduce the chances that new burrows will be used. Ideally, exclusion and burrow closure is employed only where there are adjacent natural burrows and non-impacted, sufficient habitat for burrowing owls to occupy with permanent protection mechanisms in place. Any new burrowing owl colonizing the project site after the CEQA document has been adopted may constitute changed circumstances that should be addressed in a re-circulated CEQA document.

The current scientific literature indicates that burrow exclusion should only be conducted by qualified biologists (meeting the Biologist's Qualifications above) during the non-breeding

season, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping. The literature also indicates that when temporary or permanent burrow exclusion and/or burrow closure is implemented, burrowing owls should not be excluded from burrows unless or until:

- A Burrowing Owl Exclusion Plan (see Appendix E) is developed and approved by the applicable local DFG office;
- Permanent loss of occupied burrow(s) and habitat is mitigated in accordance with the Mitigating Impacts sections below. Temporary exclusion is mitigated in accordance with the item #1 under Mitigating Impacts below.
- Site monitoring is conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided. Conduct daily monitoring for one week to confirm young of the year have fledged if the exclusion will occur immediately after the end of the breeding season.
- Excluded burrowing owls are documented using artificial or natural burrows on an adjoining mitigation site (if able to confirm by band re-sight).

Translocation (Active relocation offsite >100 meters). At this time, there is little published information regarding the efficacy of translocating burrowing owls, and additional research is needed to determine subsequent survival and breeding success (Klute et al. 2003, Holroyd et al. 2001). Study results for translocation in Florida implied that hatching success may be decreased for populations of burrowing owls that undergo translocation (Nixon 2006). At this time, the Department is unable to authorize the capture and relocation of burrowing owls except within the context of scientific research (FGC §1002) or a NCCP conservation strategy.

Mitigating impacts. Habitat loss and degradation from rapid urbanization of farmland in the core areas of the Central and Imperial valleys is the greatest of many threats to burrowing owls in California (Shuford and Gardali, 2008). At a minimum, if burrowing owls have been documented to occupy burrows (see Definitions, Appendix B) at the project site in recent years, the current scientific literature supports the conclusion that the site should be considered occupied and mitigation should be required by the CEQA lead agency to address project-specific significant and cumulative impacts. Other site-specific and regionally significant and cumulative impacts may warrant mitigation. The current scientific literature indicates the following to be best practices. If these best practices cannot be implemented, the lead agency or lead investigator may consult with the Department to develop effective mitigation alternatives. The Department is also available to assist in the identification of suitable mitigation lands.

1. Where habitat will be temporarily disturbed, restore the disturbed area to pre-project condition including decompacting soil and revegetating. Permanent habitat protection may be warranted if there is the potential that the temporary impacts may render a nesting site (nesting burrow and satellite burrows) unsustainable or unavailable depending on the time frame, resulting in reduced survival or abandonment. For the latter potential impact, see the permanent impact measures below.
2. Mitigate for permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat such that the habitat acreage, number of burrows and burrowing owls impacted are replaced based on the information provided in Appendix A. Note: A

minimum habitat replacement recommendation is not provided here as it has been shown to serve as a default, replacing any site-specific analysis and discounting the wide variation in natal area, home range, foraging area, and other factors influencing burrowing owls and burrowing owl population persistence in a particular area.

3. Mitigate for permanent impacts to nesting, occupied and satellite burrows and burrowing owl habitat with (a) permanent conservation of similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) to provide for burrowing owl nesting, foraging, wintering, and dispersal (i.e., during breeding and non-breeding seasons) comparable to or better than that of the impact area, and (b) sufficiently large acreage, and presence of fossorial mammals. The mitigation lands may require habitat enhancements including enhancement or expansion of burrows for breeding, shelter and dispersal opportunity, and removal or control of population stressors. If the mitigation lands are located adjacent to the impacted burrow site, ensure the nearest neighbor artificial or natural burrow clusters are at least within 210 meters (Fisher et al. 2007).
4. Permanently protect mitigation land through a conservation easement deeded to a non-profit conservation organization or public agency with a conservation mission, for the purpose of conserving burrowing owl habitat and prohibiting activities incompatible with burrowing owl use. If the project is located within the service area of a Department-approved burrowing owl conservation bank, the project proponent may purchase available burrowing owl conservation bank credits.
5. Develop and implement a mitigation land management plan to address long-term ecological sustainability and maintenance of the site for burrowing owls (see Management Plan and Artificial Burrow sections below, if applicable).
6. Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.
7. Habitat should not be altered or destroyed, and burrowing owls should not be excluded from burrows, until mitigation lands have been legally secured, are managed for the benefit of burrowing owls according to Department-approved management, monitoring and reporting plans, and the endowment or other long-term funding mechanism is in place or security is provided until these measures are completed.
8. Mitigation lands should be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.
9. Where there is insufficient habitat on, adjacent to, or near project sites where burrowing owls will be excluded, acquire mitigation lands with burrowing owl habitat away from the project site. The selection of mitigation lands should then focus on consolidating and enlarging conservation areas located outside of urban and planned growth areas, within foraging distance of other conserved lands. If mitigation lands are not available adjacent to other conserved lands, increase the mitigation land acreage requirement to ensure a selected site is of sufficient size. Offsite mitigation may not adequately offset the biological and habitat values impacted on a one to one basis. Consult with the Department when determining offsite mitigation acreages.
10. Evaluate and select suitable mitigation lands based on a comparison of the habitat attributes of the impacted and conserved lands, including but not limited to: type and structure of habitat being impacted or conserved; density of burrowing owls in impacted and conserved habitat; and significance of impacted or conserved habitat to the species range-wide. Mitigate for the highest quality burrowing owl habitat impacted first and foremost when identifying mitigation lands, even if a mitigation site is located outside of

a lead agency's jurisdictional boundary, particularly if the lead agency is a city or special district.

11. Select mitigation lands taking into account the potential human and wildlife conflicts or incompatibility, including but not limited to, human foot and vehicle traffic, and predation by cats, loose dogs and urban-adapted wildlife, and incompatible species management (i.e., snowy plover).
12. Where a burrowing owl population appears to be highly adapted to heavily altered habitats such as golf courses, airports, athletic fields, and business complexes, permanently protecting the land, augmenting the site with artificial burrows, and enhancing and maintaining those areas may enhance sustainability of the burrowing owl population onsite. Maintenance includes keeping lands grazed or mowed with weed-eaters or push mowers, free from trees and shrubs, and preventing excessive human and human-related disturbance (e.g., walking, jogging, off-road activity, dog-walking) and loose and feral pets (chasing and, presumably, preying upon owls) that make the environment uninhabitable for burrowing owls (Wesemann and Rowe 1985, Millsap and Bear 2000, Lincer and Bloom 2007). Items 4, 5 and 6 also still apply to this mitigation approach.
13. If there are no other feasible mitigation options available and a lead agency is willing to establish and oversee a Burrowing Owl Mitigation and Conservation Fund that funds on a competitive basis acquisition and permanent habitat conservation, the project proponent may participate in the lead agency's program.

Artificial burrows. Artificial burrows have been used to replace natural burrows either temporarily or long-term and their long-term success is unclear. Artificial burrows may be an effective addition to in-perpetuity habitat mitigation if they are augmenting natural burrows, the burrows are regularly maintained (i.e., no less than annual, with biennial maintenance recommended), and surrounding habitat patches are carefully maintained. There may be some circumstances, for example at airports, where squirrels will not be allowed to persist and create a dynamic burrow system, where artificial burrows may provide some support to an owl population.

Many variables may contribute to the successful use of artificial burrows by burrowing owls, including pre-existence of burrowing owls in the area, availability of food, predators, surrounding vegetation and proximity, number of natural burrows in proximity, type of materials used to build the burrow, size of the burrow and entrance, direction in which the burrow entrance is facing, slope of the entrance, number of burrow entrances per burrow, depth of the burrow, type and height of perches, and annual maintenance needs (Belthoff and King 2002, Smith et al. 2005, Barclay et al. 2011). Refer to Barclay (2008) and (2011) and to Johnson et al. 2010 (unpublished report) for guidance on installing artificial burrows including recommendations for placement, installation and maintenance.

Any long-term reliance on artificial burrows as natural burrow replacements must include semi-annual to annual cleaning and maintenance and/or replacement (Barclay et al. 2011, Smith and Conway 2005, Alexander et al. 2005) as an ongoing management practice. Alexander et al. (2005), in a study of the use of artificial burrows found that all of 20 artificial burrows needed some annual cleaning and maintenance. Burrows were either excavated by predators, blocked by soil or vegetation, or experienced substrate erosion forming a space beneath the tubing that prevented nestlings from re-entering the burrow.

Mitigation lands management plan. Develop a Mitigation Lands Management Plan for projects that require off-site or on-site mitigation habitat protection to ensure compliance with and effectiveness of identified management actions for the mitigation lands. A suggested outline and related vegetation management goals and monitoring success criteria can be found in Appendix E.

Mitigation Monitoring and Reporting

Verify the compliance with required mitigation measures, the accuracy of predictions, and ensure the effectiveness of all mitigation measures for burrowing owls by conducting follow-up monitoring, and implementing midcourse corrections, if necessary, to protect burrowing owls. Refer to CEQA Guidelines Section 15097 and the CEQA Guidelines for additional guidance on mitigation, monitoring and reporting. Monitoring is qualitatively different from site surveillance; monitoring normally has a specific purpose and its outputs and outcomes will usually allow a comparison with some baseline condition of the site before the mitigation (including avoidance and minimization) was undertaken. Ideally, monitoring should be based on the Before-After Control-Impact (BACI) principle (McDonald et al. 2000) that requires knowledge of the pre-mitigation state to provide a reference point for the state and change in state after the project and mitigation have been implemented.

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Appendix A. Burrowing Owl Natural History and Threats

Diet

Burrowing owl diet includes arthropods, small rodents, birds, amphibians, reptiles, and carrion (Haug et al. 1993).

Breeding

In California, the breeding season for the burrowing owl typically occurs between 1 February and 31 August although breeding in December has been documented (Thompson 1971, Gervais et al. 2008); breeding behavior includes nest site selection by the male, pair formation, copulation, egg laying, hatching, fledging, and post-fledging care of young by the parents. The peak of the breeding season occurs between 15 April and 15 July and is the period when most burrowing owls have active nests (eggs or young). The incubation period lasts 29 days (Coulombe 1971) and young fledge after 44 days (Haug et al. 1993). Note that the timing of nesting activities may vary with latitude and climatic conditions. Burrowing owls may change burrows several times during the breeding season, starting when nestlings are about three weeks old (Haug et al. 1993).

Dispersal

The following discussion is an excerpt from Gervais et al (2008):

> "The burrowing owl is often considered a sedentary species (e.g., Thomsen 1971). A large proportion of adults show strong fidelity to their nest site from year to year, especially where resident, as in Florida (74% for females, 83% for males; Millsap and Bear 1997). In California, nest-site fidelity rates were 32%–50% in a large grassland and 57% in an agricultural environment (Ronan 2002, Catlin 2004, Catlin et al. 2005). Differences in these rates among sites may reflect differences in nest predation rates (Catlin 2004, Catlin et al. 2005). Despite the high nest fidelity rates, dispersal distances may be considerable for both juveniles (natal dispersal) and adults (postbreeding dispersal), but this also varied with location (Catlin 2004, Rosier et al. 2006). Distances of 53 km to roughly 150 km have been observed in California for adult and natal dispersal, respectively (D. K. Rosenberg and J. A. Gervais, unpublished data), despite the difficulty in detecting movements beyond the immediate study area (Koenig et al. 1996)."

Habitat

The burrowing owl is a small, long-legged, ground-dwelling bird species, well-adapted to open, relatively flat expanses. In California, preferred habitat is generally typified by short, sparse vegetation with few shrubs, level to gentle topography and well-drained soils (Haug et al. 1993). Grassland, shrub steppe, and desert are naturally occurring habitat types used by the species. In addition, burrowing owls may occur in some agricultural areas, ruderal grassy fields, vacant lots and pastures if the vegetation structure is suitable and there are useable burrows and foraging habitat in proximity (Gervais et al 2008). Unique amongst North

American raptors, the burrowing owl requires underground burrows or other cavities for nesting during the breeding season and for roosting and cover, year round. Burrows used by the owls are usually dug by other species termed host burrowers. In California, California ground squirrel (*Spermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*) burrows are frequently used by burrowing owls but they may use dens or holes dug by other fossorial species including badger (*Taxidea taxus*), coyote (*Canis latrans*), and fox (e.g., San Joaquin kit fox, *Vulpes macrotis mutica*; Ronan 2002). In some instances, owls have been known to excavate their own burrows (Thompson 1971, Barclay 2007). Natural rock cavities, debris piles, culverts, and pipes also are used for nesting and roosting (Rosenberg et al. 1998). Burrowing owls have been documented using artificial burrows for nesting and cover (Smith and Belthoff, 2003).

Foraging habitat. Foraging habitat is essential to burrowing owls. The following discussion is an excerpt from Gervais et al. (2008):

> "Useful as a rough guide to evaluating project impacts and appropriate mitigation for burrowing owls, adult male burrowing owls home ranges have been documented (calculated by minimum convex polygon) to comprise anywhere from 280 acres in intensively irrigated agroecosystems in Imperial Valley (Rosenberg and Haley 2004) to 450 acres in mixed agricultural lands at Lemoore Naval Air Station, CA (Gervais et al. 2003), to 600 acres in pasture in Saskatchewan, Canada (Haug and Oliphant 1990). But owl home ranges may be much larger, perhaps by an order of magnitude, in non-irrigated grasslands such as at Carrizo Plain, California (Gervais et al. 2008), based on telemetry studies and distribution of nests. Foraging occurs primarily within 600 m of their nests (within approximately 300 acres, based on a circle with a 600 m radius) during the breeding season."

Importance of burrows and adjacent habitat. Burrows and the associated surrounding habitat are essential ecological requisites for burrowing owls throughout the year and especially during the breeding season. During the non-breeding season, burrowing owls remain closely associated with burrows, as they continue to use them as refuge from predators, shelter from weather and roost sites. Resident populations will remain near the previous season's nest burrow at least some of the time (Coulombe 1971, Thomsen 1971, Botelho 1996, LaFever et al. 2008).

In a study by Lutz and Plumpton (1999) adult males and females nested in formerly used sites at similar rates (75% and 63%, respectively) (Lutz and Plumpton 1999). Burrow fidelity has been reported in some areas; however, more frequently, burrowing owls reuse traditional nesting areas without necessarily using the same burrow (Haug et al. 1993, Dechant et al. 1999). Burrow and nest sites are re-used at a higher rate if the burrowing owl has reproduced successfully during the previous year (Haug et al. 1993) and if the number of burrows isn't limiting nesting opportunity.

Burrowing owls may use "satellite" or non-nesting burrows, moving young at 10-14 days, presumably to reduce risk of predation (Desmond and Savidge 1998) and possibly to avoid nest parasites (Dechant et al. 1999). Successful nests in Nebraska had more active satellite burrows within 75 m of the nest burrow than unsuccessful nests (Desmond and Savidge

1999). Several studies have documented the number of satellite burrows used by young and adult burrowing owls during the breeding season as between one and 11 burrows with an average use of approximately five burrows (Thompsen 1984, Haug 1985, Haug and Oliphant 1990). Supporting the notion of selecting for nest sites near potential satellite burrows, Ronan (2002) found burrowing owl families would move away from a nest site if their satellite burrows were experimentally removed through blocking their entrance.

Habitat adjacent to burrows has been documented to be important to burrowing owls. Gervais et al. (2003) found that home range sizes of male burrowing owls during the nesting season were highly variable within but not between years. Their results also suggested that owls concentrate foraging efforts within 600 meters of the nest burrow, as was observed in Canada (Haug and Oliphant 1990) and southern California (Rosenberg and Haley 2004). James et al. (1997), reported habitat modification factors causing local burrowing owl declines included habitat fragmentation and loss of connectivity.

In conclusion, the best available science indicates that essential habitat for the burrowing owl in California must include suitable year-round habitat, primarily for breeding, foraging, wintering and dispersal habitat consisting of short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey within close proximity to the burrow.

Threats to Burrowing Owls in California

Habitat loss. Habitat loss, degradation, and fragmentation are the greatest threats to burrowing owls in California. According to DeSante et al. (2007), "the vast majority of burrowing owls [now] occur in the wide, flat lowland valleys and basins of the Imperial Valley and Great Central Valley [where] for the most part,...the highest rates of residential and commercial development in California are occurring." Habitat loss from the State's long history of urbanization in coastal counties has already resulted in either extirpation or drastic reduction of burrowing owl populations there (Gervais et al. 2008). Further, loss of agricultural and other open lands (such as grazed landscapes) also negatively affect owl populations. Because of their need for open habitat with low vegetation, burrowing owls are unlikely to persist in agricultural lands dominated by vineyards and orchards (Gervais et al. 2008).

Control of burrowing rodents. According to Klute et al. (2003), the elimination of burrowing rodents through control programs is a primary factor in the recent and historical decline of burrowing owl populations nationwide. In California, ground squirrel burrows are most often used by burrowing owls for nesting and cover; thus, ground squirrel control programs may affect owl numbers in local areas by eliminating a necessary resource.

Direct mortality. Burrowing owls suffer direct losses from a number of sources. Vehicle collisions are a significant source of mortality especially in the urban interface and where owls nest alongside roads (Haug et al. 1993, Gervais et al. 2008). Road and ditch maintenance, modification of water conveyance structures (Imperial Valley) and discing to control weeds in fallow fields may destroy burrows (Rosenberg and Haley 2004, Catlin and Rosenberg 2006) which may trap or crush owls. Wind turbines at Altamont Pass Wind Resource Area are known to cause direct burrowing owl mortality (Thelander et al. 2003). Exposure to

pesticides may pose a threat to the species but is poorly understood (Klute et al. 2003, Gervais et al. 2008).

Appendix B. Definitions

Some key terms that appear in this document are defined below.

Adjacent habitat means burrowing owl habitat that abuts the area where habitat and burrows will be impacted and rendered non-suitable for occupancy.

Breeding (nesting) season begins as early as 1 February and continues through 31 August (Thomsen 1971, Zarn 1974). The timing of breeding activities may vary with latitude and climatic conditions. The breeding season includes pairing, egg-laying and incubation, and nestling and fledging stages.

Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls or permanently exclude burrowing owls and excavate and close burrows after confirming burrows are empty.

Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey.

Burrow surrogates include culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures.

Civil twilight - Morning civil twilight begins when the geometric center of the sun is 6 degrees below the horizon (civil dawn) and ends at sunrise. Evening civil twilight begins at sunset and ends when the geometric center of the sun reaches 6 degrees below the horizon (civil dusk). During this period there is enough light from the sun that artificial sources of light may not be needed to carry on outdoor activities. This concept is sometimes enshrined in laws, for example, when drivers of automobiles must turn on their headlights (called lighting-up time in the UK); when pilots may exercise the rights to fly aircraft. Civil twilight can also be described as the limit at which twilight illumination is sufficient, under clear weather conditions, for terrestrial objects to be clearly distinguished; at the beginning of morning civil twilight, or end of evening civil twilight, the horizon is clearly defined and the brightest stars are visible under clear atmospheric conditions.

Conservation for burrowing owls may include but may not be limited to protecting remaining breeding pairs or providing for population expansion, protecting and enhancing breeding and essential habitat, and amending or augmenting land use plans to stabilize populations and other specific actions to avoid the need to list the species pursuant to California or federal Endangered Species Acts.

Contiguous means connected together so as to form an uninterrupted expanse in space.

Essential habitat includes nesting, foraging, wintering, and dispersal habitat.

Foraging habitat is habitat within the estimated home range of an occupied burrow, supports suitable prey base, and allows for effective hunting.

Host burrowers include ground squirrels, badgers, foxes, coyotes, gophers etc.

Locally significant species is a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or occurring in a unique habitat type.

Non-breeding season is the period of time when nesting activity is not occurring, generally September 1 through January 31, but may vary with latitude and climatic conditions.

Occupied site or occupancy means a site that is assumed occupied if at least one burrowing owl has been observed occupying a burrow within the last three years (Rich 1984). Occupancy of suitable burrowing owl habitat may also be indicated by owl sign including its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance or perch site.

Other impacting activities may include but may not be limited to agricultural practices, vegetation management and fire control, pest management, conversion of habitat from rangeland or natural lands to more intensive agricultural uses that could result in “take”. These impacting activities may not meet the definition of a project under CEQA.

Passive relocation is a technique of installing one-way doors in burrow openings to temporarily or permanently evict burrowing owls and prevent burrow re-occupation.

Peak of the breeding season is between 15 April and 15 July.

Sign includes its tracks, molted feathers, cast pellets (defined as 1-2” long brown to black regurgitated pellets consisting of non-digestible portions of the owls’ diet, such as fur, bones, claws, beetle elytra, or feathers), prey remains, egg shell fragments, owl white wash, nest burrow decoration materials (e.g., paper, foil, plastic items, livestock or other animal manure, etc.), possible owl perches, or other items.

Appendix C. Habitat Assessment and Reporting Details

Habitat Assessment Data Collection and Reporting

Current scientific literature indicates that it would be most effective to gather the data in the manner described below when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report:

1. Conduct at least one visit covering the entire potential project/activity area including areas that will be directly or indirectly impacted by the project. Survey adjoining areas within 150 m (Thomsen 1971, Martin 1973), or more where direct or indirect effects could potentially extend offsite. If lawful access cannot be achieved to adjacent areas, surveys can be performed with a spotting scope or other methods.
2. Prior to the site visit, compile relevant biological information for the site and surrounding area to provide a local and regional context.
3. Check all available sources for burrowing owl occurrence information regionally prior to a field inspection. The CNDDB and BIOS (see References cited) may be consulted for known occurrences of burrowing owls. Other sources of information include, but are not limited to, the Proceedings of the California Burrowing Owl Symposium (Barclay et al. 2007), county bird atlas projects, Breeding Bird Survey records, eBIRD (http://ebird.org), Gervais et al. (2008), local reports or experts, museum records, and other site-specific relevant information.
4. Identify vegetation and habitat types potentially supporting burrowing owls in the project area and vicinity.
5. Record and report on the following information:
    a. A full description of the proposed project, including but not limited to, expected work periods, daily work schedules, equipment used, activities performed (such as drilling, construction, excavation, etc.) and whether the expected activities will vary in location or intensity over the project's timeline;
    b. A regional setting map, showing the general project location relative to major roads and other recognizable features;
    c. A detailed map (preferably a USGS topo 7.5' quad base map) of the site and proposed project, including the footprint of proposed land and/or vegetation-altering activities, base map source, identifying topography, landscape features, a north arrow, bar scale, and legend;
    d. A written description of the biological setting, including location (Section, Township, Range, baseline and meridian), acreage, topography, soils, geographic and hydrologic characteristics, land use and management history on and adjoining the site (i.e., whether it is urban, semi-urban or rural; whether there is any evidence of past or current livestock grazing, mowing, disking, or other vegetation management activities);
    e. An analysis of any relevant, historical information concerning burrowing owl use or occupancy (breeding, foraging, over-wintering) on site or in the assessment area;
    f. Vegetation type and structure (using Sawyer et al. 2009), vegetation height, habitat types and features in the surrounding area plus a reasonably sized (as supported with logical justification) assessment area; (Note: use caution in discounting habitat based on grass height as it can be a temporary condition variable by season and conditions (such as current grazing regime) or may be distributed as a mosaic).

g. The presence of burrowing owl individuals or pairs or sign (see Appendix B);
h. The presence of suitable burrows and/or burrow surrogates (>11 cm in diameter (height and width) and >150 cm in depth) (Johnson et al. 2010), regardless of a lack of any burrowing owl sign and/or burrow surrogates; and burrowing owls and/or their sign that have recently or historically (within the last 3 years) been identified on or adjacent to the site.

Appendix D. Breeding and Non-breeding Season Surveys and Reports

Current scientific literature indicates that it is most effective to conduct breeding and non-breeding season surveys and report in the manner that follows:

Breeding Season Surveys

Number of visits and timing. Conduct 4 survey visits: 1) at least one site visit between 15 February and 15 April, and 2) a minimum of three survey visits, at least three weeks apart, between 15 April and 15 July, with at least one visit after 15 June. Note: many burrowing owl migrants are still present in southwestern California during mid-March, therefore, exercise caution in assuming breeding occupancy early in the breeding season.

Survey method. Rosenberg et al. (2007) confirmed walking line transects were most effective in smaller habitat patches. Conduct surveys in all portions of the project site that were identified in the Habitat Assessment and fit the description of habitat in Appendix A. Conduct surveys by walking straight-line transects spaced 7 m to 20 m apart, adjusting for vegetation height and density (Rosenberg et al. 2007). At the start of each transect and, at least, every 100 m, scan the entire visible project area for burrowing owls using binoculars. During walking surveys, record all potential burrows used by burrowing owls as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls, so observers should also listen for burrowing owls while conducting the survey.

Care should be taken to minimize disturbance near occupied burrows during all seasons and not to "flush" burrowing owls especially if predators are present to reduce any potential for needless energy expenditure or burrowing owl mortality. Burrowing owls may flush if approached by pedestrians within 50 m (Conway et al. 2003). If raptors or other predators are present that may suppress burrowing owl activity, return at another time or later date for a follow-up survey.

Check all burrowing owls detected for bands and/or color bands and report band combinations to the Bird Banding Laboratory (BBL). Some site-specific variations to survey methods discussed below may be developed in coordination with species experts and Department staff.

Weather conditions. Poor weather may affect the surveyor's ability to detect burrowing owls, therefore, avoid conducting surveys when wind speed is >20 km/hr, and there is precipitation or dense fog. Surveys have greater detection probability if conducted when ambient temperatures are >20º C, <12 km/hr winds, and cloud cover is <75% (Conway et al. 2008).

Time of day. Daily timing of surveys varies according to the literature, latitude, and survey method. However, surveys between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight provide the highest detection probabilities (Barclay pers. comm. 2012, Conway et al. 2008).

Alternate methods. If the project site is large enough to warrant an alternate method, consult current literature for generally accepted survey methods and consult with the Department on the proposed survey approach.

Additional breeding season site visits. Additional breeding season site visits may be necessary, especially if non-breeding season exclusion methods are contemplated. Detailed information, such as approximate home ranges of each individual or of family units, as well as foraging areas as related to the proposed project, will be important to document for evaluating impacts, planning avoidance measure implementation and for mitigation measure performance monitoring.

Adverse conditions may prevent investigators from determining presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owls in any given year. Any such conditions should be identified and discussed in the survey report. Visits to the site in more than one year may increase the likelihood of detection. Also, visits to adjacent known occupied habitat may help determine appropriate survey timing.

Given the high site fidelity shown by burrowing owls (see Appendix A, Importance of burrows), conducting surveys over several years may be necessary when project activities are ongoing, occur annually, or start and stop seasonally. (See Negative surveys).

Non-breeding Season Surveys

If conducting non-breeding season surveys, follow the methods described above for breeding season surveys, but conduct at least four (4) visits, spread evenly, throughout the non-breeding season. Burrowing owl experts and local Department staff are available to assist with interpreting results.

Negative Surveys

Adverse conditions may prevent investigators from documenting presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owl in any given year. Discuss such conditions in the Survey Report. Visits to the site in more than one year increase the likelihood of detection and failure to locate burrowing owls during one field season does not constitute evidence that the site is no longer occupied, particularly if adverse conditions influenced the survey results. Visits to other nearby known occupied sites can affirm whether the survey timing is appropriate.

Take Avoidance Surveys

Field experience from 1995 to present supports the conclusion that it would be effective to complete an initial take avoidance survey no less than 14 days prior to initiating ground disturbance activities using the recommended methods described in the Detection Surveys section above. Implementation of avoidance and minimization measures would be triggered by positive owl presence on the site where project activities will occur. The development of avoidance and minimization approaches would be informed by monitoring the burrowing owls.

Burrowing owls may re-colonize a site after only a few days. Time lapses between project activities trigger subsequent take avoidance surveys including but not limited to a final survey conducted within 24 hours prior to ground disturbance.

Survey Reports

Report on the survey methods used and results including the information described in the Summary Report and include the reports within the CEQA documentation:

1. Date, start and end time of surveys including weather conditions (ambient temperature, wind speed, percent cloud cover, precipitation and visibility);
2. Name(s) of surveyor(s) and qualifications;
3. A discussion of how the timing of the survey affected the comprehensiveness and detection probability;
4. A description of survey methods used including transect spacing, point count dispersal and duration, and any calls used;
5. A description and justification of the area surveyed relative to the project area;
6. A description that includes: number of owls or nesting pairs at each location (by nestlings, juveniles, adults, and those of an unknown age), number of burrows being used by owls, and burrowing owl sign at burrows. Include a description of individual markers, such as bands (numbers and colors), transmitters, or unique natural identifying features. If any owls are banded, request documentation from the BBL and bander to report on the details regarding the known history of the banded burrowing owl(s) (age, sex, origins, whether it was previously relocated) and provide with the report if available;
7. A description of the behavior of burrowing owls during the surveys, including feeding, resting, courtship, alarm, territorial defense, and those indicative of parents or juveniles;
8. A list of possible burrowing owl predators present and documentation of any evidence of predation of owls;
9. A detailed map (1:24,000 or closer to show details) showing locations of all burrowing owls, potential burrows, occupied burrows, areas of concentrated burrows, and burrowing owl sign. Locations documented by use of global positioning system (GPS) coordinates must include the datum in which they were collected. The map should include a title, north arrow, bar scale and legend;
10. Signed field forms, photos, etc., as appendices to the field survey report;
11. Recent color photographs of the proposed project or activity site; and
12. Original CNDDB Field Survey Forms should be sent directly to the Department's CNDDB office, and copies should be included in the environmental document as an appendix. (http://www.dfg.ca.gov/bdb/html/cnddb.html).

Appendix E. Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans

Whereas the Department does not recommend exclusion and burrow closure, current scientific literature and experience from 1995 to present, indicate that the following example components for burrowing owl artificial burrow and exclusion plans, combined with consultation with the Department to further develop these plans, would be effective.

Artificial Burrow Location

If a burrow is confirmed occupied on-site, artificial burrow locations should be appropriately located and their use should be documented taking into consideration:

1. A brief description of the project and project site pre-construction;
2. The mitigation measures that will be implemented;
3. Potential conflicting site uses or encumbrances;
4. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features);
5. Artificial burrow(s) proximity to the project activities, roads and drainages;
6. Artificial burrow(s) proximity to other burrows and entrance exposure;
7. Photographs of the site of the occupied burrow(s) and the artificial burrows;
8. Map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows;
9. A brief description of the artificial burrow design;
10. Description of the monitoring that will take place during and after project implementation including information that will be provided in a monitoring report.
11. A description of the frequency and type of burrow maintenance.

Exclusion Plan

An Exclusion Plan addresses the following including but not limited to:

1. Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding burrow scoping;
2. Type of scope and appropriate timing of scoping to avoid impacts;
3. Occupancy factors to look for and what will guide determination of vacancy and excavation timing (one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape i.e., look for sign immediately inside the door).
4. How the burrow(s) will be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow);
5. Removal of other potential owl burrow surrogates or refugia on site;
6. Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

7. Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;
8. How the impacted site will continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete.

Appendix F. Mitigation Management Plan and Vegetation Management Goals

Mitigation Management Plan

A mitigation site management plan will help ensure the appropriate implementation and maintenance for the mitigation site and persistence of the burrowing owls on the site. For an example to review, refer to Rosenberg et al. (2009). The current scientific literature and field experience from 1995 to present indicate that an effective management plan includes the following:

1. Mitigation objectives;
2. Site selection factors (including a comparison of the attributes of the impacted and conserved lands) and baseline assessment;
3. Enhancement of the conserved lands (enhancement of reproductive capacity, enhancement of breeding areas and dispersal opportunities, and removal or control of population stressors);
4. Site protection method and prohibited uses;
5. Site manager roles and responsibilities;
6. Habitat management goals and objectives:
    a. Vegetation management goals,
        i. Vegetation management tools:
            1. Grazing
            2. Mowing
            3. Burning
            4. Other
    b. Management of ground squirrels and other fossorial mammals,
    c. Semi-annual and annual artificial burrow cleaning and maintenance,
    d. Non-natives control – weeds and wildlife,
    e. Trash removal;
7. Financial assurances:
    a. Property analysis record or other financial analysis to determine long-term management funding,
    b. Funding schedule;
8. Performance standards and success criteria;
9. Monitoring, surveys and adaptive management;
10. Maps;
11. Annual reports.

Vegetation Management Goals

- Manage vegetation height and density (especially in immediate proximity to burrows). Suitable vegetation structure varies across sites and vegetation types, but should generally be at the average effective vegetation height of 4.7 cm (Green and Anthony 1989) and <13 cm average effective vegetation height (MacCracken et al. 1985*a)*.
- Employ experimental prescribed fires (controlled, at a small scale) to manage vegetation structure;

- Vegetation reduction or ground disturbance timing, extent, and configuration should avoid take. While local ordinances may require fire prevention through vegetation management, activities like disking, mowing, and grading during the breeding season can result in take of burrowing owls and collapse of burrows, causing nest destruction. Consult the take avoidance surveys section above for pre-management avoidance survey recommendations;
- Promote natural prey distribution and abundance, especially in proximity to occupied burrows; and
- Promote self-sustaining populations of host burrowers by limiting or prohibiting lethal rodent control measures and by ensuring food availability for host burrowers through vegetation management.

Refer to Rosenberg et al. (2009) for a good discussion of managing grasslands for burrowing owls.

Mitigation Site Success Criteria

In order to evaluate the success of mitigation and management strategies for burrowing owls, monitoring is required that is specific to the burrowing owl management plan. Given limited resources, Barclay et al. (2011) suggests managers focus on accurately estimating annual adult owl populations rather than devoting time to estimating reproduction, which shows high annual variation and is difficult to accurately estimate. Therefore, the key objective will be to determine accurately the number of adult burrowing owls and pairs, and if the numbers are maintained. A frequency of 5-10 years for surveys to estimate population size may suffice if there are no changes in the management of the nesting and foraging habitat of the owls.

Effective monitoring and evaluation of off-site and on-site mitigation management success for burrowing owls includes (Barclay, pers. comm.):

- Site tenacity;
- Number of adult owls present and reproducing;
- Colonization by burrowing owls from elsewhere (by band re-sight);
- Evidence and causes of mortality;
- Changes in distribution; and
- Trends in stressors.

Attachment E

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2730 Loker Avenue West
Carlsbad, California 92008

LEAST BELL'S VIREO SURVEY GUIDELINES

JAN 1 9 2001

The following suggested guidelines are provided to facilitate accurate assessments of the presence/absence of the State and federally endangered least Bell's vireo (*Vireo bellii pusillus*, vireo), to provide the Fish and Wildlife Service with sufficient information to adequately respond to requests for applicable Federal permits and licenses, and to fulfill our mandate to conserve and recover the species. Currently, a recovery permit pursuant to section 10(a)(1)(A) of the Endangered Species Act is not required to conduct presence/absence surveys for the vireo, as long as this protocol is utilized and vocalization tapes are not used. These guidelines include minor modifications to our February 1992 guidelines and provide clarification of what we have been verbally recommending.

1. Under normal circumstances, all riparian areas and any other potential vireo habitats should be surveyed at least eight (8) times during the period from April 10 to July 31. However, we may concur, on a case by case basis, with a reduced effort if unusual circumstances dictate that this is a prudent course of action. For instance, intensive surveys of small, marginal or extralimital habitats by experienced personnel may well result in defensible conclusions that eight (or more) individual survey are unnecessary. Under such unusual circumstances, we will consider requests for reductions in the prescribed number of individual surveys. In any case, site visits should be conducted at least 10 days apart to maximize the detection of, for instance, late and early arrivals, females, particularly "non vocal" birds of both sexes, and nesting pairs.

2. Although the period from April 10 to July 31 encompasses the period during which most vireo nesting activity occurs, eight surveys are generally sufficient to detect most (if not all) vireo adults in occupied habitats. Precise vireo censuses and estimations of home range likely will not be possible unless surveys are conducted outside of this time window. Although focused surveys conducted in accordance with these guidelines substantially reduce the risk of an unauthorized take* that could potentially occur as a result of land development or other projects, individual project proponents may wish to conduct surveys that are more rigorous than those that would otherwise result from strict adherence to these survey guidelines. If additional information (e.g., extent of occupied habitat, total numbers of adult and juvenile vireos in study area) is desired or necessary, surveys should be extended to August 31 and conducted in such a manner as to collect the data necessary to prepare reports that reflect the methods and standards established in the current scientific literature on this subject. In particular, information collected after July

15 will reflect a broader extent to the riparian habitat and other adjacent habitat types that the vireo typically utilizes during the latter phase of the breeding season, especially when the young become independent of the adults.

3. Surveys should be conducted by a qualified biologist familiar with the songs, whisper songs, calls, scolds, and plumage characteristics of adult and juvenile vireos. These skills are essential to maximize the probability of detecting vireos and to avoid potentially harassing the species in occupied habitats.

4. Surveys should be conducted between dawn and 11:00 a.m. Surveys should not be conducted during periods of excessive or abnormal cold, heat, wind, rain, or other inclement weather that individually or collectively may reduce the likelihood of detection.

5. Surveyors should not survey more than 3 linear kilometers or more than 50 hectares of habitat on any given survey day. Although surveyors should generally station themselves in the best possible locations to hear or see vireos, care should be taken not to disturb potential or actual vireo habitats and nests or the habitat of any sensitive or listed riparian species.

6. All vireo detections (e.g., vocalization points, areas used for foraging, etc.) should be recorded and subsequently plotted to estimate the location and extent of habitats utilized. These data should be mapped on the appropriate USGS quadrangle map.

7. Data pertaining to vireo status and distribution (e.g., numbers and locations of paired or unpaired territorial males, ages and sexes of all birds encountered) should be noted and recorded during each survey. In addition, surveyors should look for leg bands on vireo adults and juveniles if, in fact, it is possible to do so without disturbing or harassing the birds. If leg bands or other markers are observed, then surveyors should record and report the detection and associated circumstances to us by telephone, facsimile, or electronic mail as soon as possible. Reports should include the colors and relative locations of any and all bands detected, the age and sex of the marked bird, and the precise location of the detection.

8. The numbers and locations of all brown-headed cowbirds (*Molothrus ater*) detected within vireo territories should be recorded during each survey and subsequently reported to us. In addition, all detections of the State and federally endangered southwestern willow flycatcher (*Empidonax trallii extimus*, flycatcher) and State endangered yellow-billed cuckoo (*Coccyzus americanus*, cuckoo) should be recorded and reported. Any and all cuckoo and flycatcher adults, young, or nests should not be approached, and taped vocalizations of these species should not be used unless authorized in advance by scientific permits to take* issued by us (if appropriate) and the California Department of Fish and Game. Flycatcher presence/absence surveys require a recovery permit issued by us per section 10(a)(1)(A) of the Endangered Species Act.

9. To avoid the potential harassment of vireos, flycatchers, and cuckoos resulting from vireo surveys, other riparian species survey efforts, or multiple surveys within a given riparian habitat patch, detections of these three species should be reported to us as soon possible by telephone, facsimile, or electronic mail.

10. A final report (including maps) should be prepared that depicts survey dates and times and includes descriptions or accounts of the methods, locations, data and information identified in preceding sections.

11. This final report should be provided to us (at the letterhead address) and to the local office of the Department of Fish and Game within 45 calendar days following the completion of the survey effort. Additionally, a summary of all vireo survey efforts conducted during the calendar year should be submitted to each of the above offices by January 31 of the following year.

Should you have data or information to report, or have any questions regarding these survey guidelines, please contact Christine Moen (christine_moen@fws.gov), or Loren Hays (loren_hays@fws.gov) of my staff at (760) 431-9440 (facsimile 760-431-9624), or John Gustafson (jgustafs@hq.dfg.ca.gov) with the Department of Fish and Game at (916) 654-4260 (facsimile 916-653-1019).

Sincerely,

Andrew R. Yuen

Ken S. Berg
Acting Field Supervisor

* The term "take," as defined in Section 3, paragraph 18 of the Endangered Species Act of 1973 as amended (Act), means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. "Take" (specifically "harass") is further defined to mean "an act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding, and sheltering" "Take" (specifically "harm") is further defined as an "act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding feeding or sheltering" (50 CFR 17.3). Please be advised that the take of the vireo and other listed species is prohibited by section 9 of the Act unless authorized by permits issued pursuant to section 7 or section 10 to the Act.

Attachment F

I. **Biological Background: Effects of excess water on soil chemistry and the vegetation community**

II. **Wetland Definitions, Wetland Parameters, & Wetland Field Indicators**

III. **Wetland Parameters in the Coastal Zone**

IV. **Field Indicators of Wetland Parameters in the Coastal Zone**

V. **Dealing with Problem Areas**

2

Accumulation of Organic Materials

3

Reduction Sequence

Increasing Reduction	Element	Generalized Reaction
↓	Oxygen	$O_2 \rightarrow H_20$
	Nitrogen	$NO^{3-} \rightarrow N_2$
	Manganese	$MnO_2 \rightarrow Mn^{2+}$
	Iron	$\mathbf{Fe_2O_3 \rightarrow Fe^{2+}}$
	Sulfur	$SO_4^{2-} \rightarrow H_2S$
	Carbon	$CO_2 \rightarrow CH_4$

4

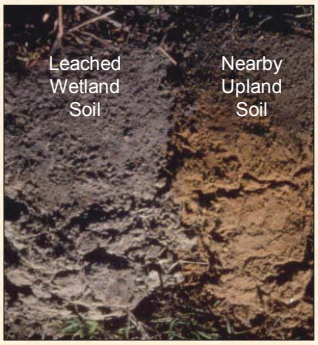
Iron Produces Yellow, Brown & Red Colors in Soil

5

Organic Staining Creates Black Colors in Soil as in this Prairie Soil

6

Removal of Iron Through Leaching Also Creates Dark Colors in Soil



7

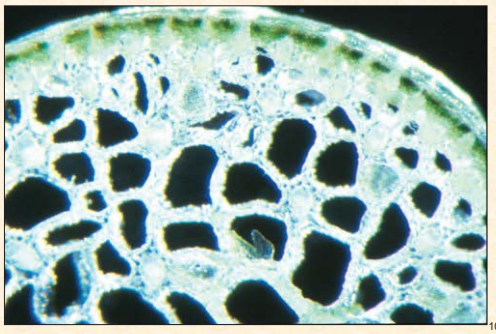
Reddish Brown Mottles

8

Adventitious roots

9

Air Spaces (Aerenchyma) In Roots and Stems



10

Oxidized rhizospheres

11

Wetland Definitions are Based on Excess Water

Lands transitional between terrestrial and aquatic systems **where the water table is usually at or near the surface, or the land is covered by shallow water**. (USFWS Definition)

"Those **areas inundated or saturated by surface or groundwater** at a frequency and duration to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." (ACOE Definition)

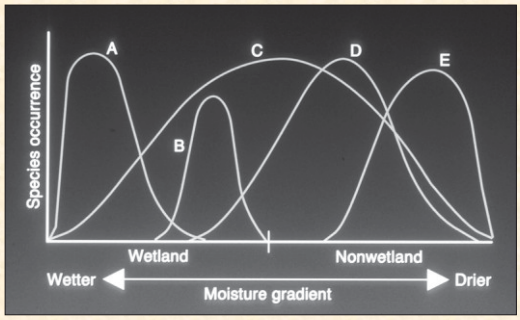
Lands within the coastal zone which may be **covered periodically or permanently with shallow water** and include saltwater marshes, freshwater marshes, open or closed rackish water marshes, swamps, mudflats, and fens. (CCC Definition)

12

Wetland Definitions

Definitions are broad, general statements of the essential properties of wetlands.

13



Wetlands & Wetland Plants Occur Along a Moisture Gradient

14

Wetland Parameters

Wetland parameters are specific attributes of wetlands that are the basis of wetland delineation.

15

Wetland Parameters

1. Wetland Hydrology
2. Wetland (Hydrophytic) Vegetation
3. Wetland (Hydric) Soil

16

Field Indicators

Field Indicators are physical, chemical, or biological features of an area that can be easily observed or assayed and that are usually correlated with the presence of a wetland parameter.

17

Federal Manuals & Guidance

- **1987 Corps of Engineers Wetlands Delineation Manual**
- 1988 EPA Wetlands Delineation Manual
- 1989 Federal manual for Identifying and Delineating Jurisdictional Wetlands (Interagency Manual)
- 1991 Proposed Wetlands Delineation Manual
- 1994 National Food Security Act Manual (3rd Edition)
- **2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region**
- **2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region**
- 2010 Natural Resource Conservation Service Field Indicators of hydric soils (7th Edition)

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Arid West Region

19

Western Mountains, Valleys, and Coast Region

20

California Hydrology Parameter

Wetland hydrology is present if "the water table is at, near, or above the land surface **long enough** to promote the formation of hydric soils or to support the growth of hydrophytes."

21

"The authors of the USFWS wetland classification maintained that **it is neither reasonable nor practicable to establish a quantitative hydrologic criterion** for field identification of wetlands. We still believe that, in the great majority of cases, wetlands should be identified by vegetation and soils. We argue that hydrology should be used only where soil and vegetation criteria cannot reasonably be applied, such as in highly disturbed wetlands…."

Cowardin, L.M & F.C. Golet. 1995. Vegetatio 118:139-152

22

Staff Approach to Hydrology

If during most years the soil is continuously covered with water or the upper 12 inches are continously saturated:

For fewer than 7 days, the area is an upland

For 7 to 13 days, the area may be a wetland

For 14 days or more, the area is a wetland

23

Hydric Soil Parameter

Hydric soils are "soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil." NRCS

"Hydric soils are soils that for a significant period of the growing season have reducing conditions in the major part of the root zone and are saturated within 25 cm of the surface." 1981 CCC Guidelines

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Wetland Vegetation Parameter

"Wetland Vegetation" is a plant community that is characterized by a **predominance** of **hydrophytes**

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Hydrophyte

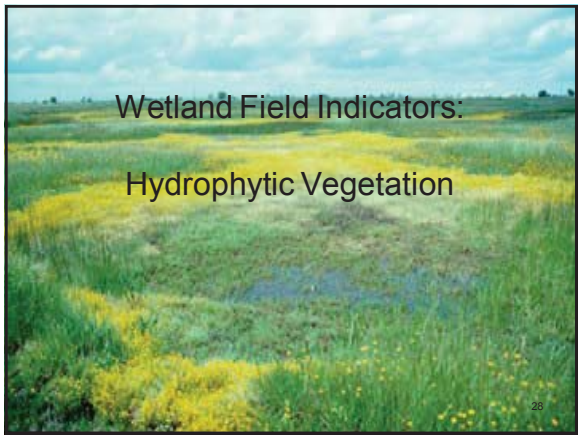
Any plant "that grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content." (CCC 1981 Guidelines; 1987 ACOE Manual)

26

Predominant Vegetation

The predominant vegetation is comprised of those species that contribute most to the overall wetland or upland character of the plant community.

27



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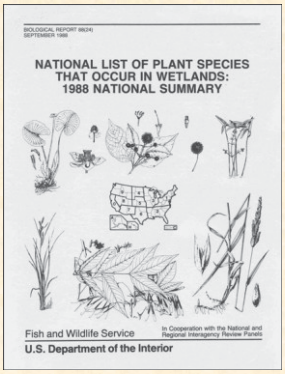
U.S. Fish & Wildlife Service Plant List



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A New "National Wetland Plant List" Administered by the Corps of Engineers Is on the Internet and Can Be Easily Updated


2013 National Wetland Plant List

http://wetland_plants.usace.army.mil

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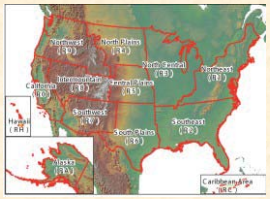
Old Plant List Was Based on Political Boundaries



New List Is Based on Ecological Regions

Classification of Plant Species That Occur in Wetlands

Wetland Indicator Class	Symbol	Frequency of Occurrence in Wetlands
Obligate Wetland Plant	OBL	>99% (under natural conditions)
Facultative Wetland Plant	FACW	67% - 99%
Facultative Plant	FAC	33% - 66%
Facultative Upland Plant	FACU	1% - 33%
Obligate Upland Plant	UPL	<1% (under natural conditions)

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Identifying Hydrophytes

Where they are predominant, plant species classified as OBL, FACW, or FAC are presumed to be growing as "hydrophytes."

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Assessing Predominance

35

Assessing Predominance

Dominance Ratio

There is a predominance of hydrophytes if more than 50 percent of the **dominant species** are classified as FAC, FACW, or OBL.

Prevalence Index

There is a predominance of hydrophytes if the weighted average wetland index of **all species** is less 3.0, where 1.0 is all OBL and 5.0 is all UPL.

36

Selection of Dominant Species

The "50/20 Rule":

For each stratum in the plant community, dominant species are the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50 percent of the total dominance measure plus any additional species that comprises 20 percent or more of the total dominance measure. This approach requires a quantitative estimate of abundance.

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Selection of Dominant Species

Species	Wetland Class	Percent Cover	Cumulative Total
√*Lolium perenne*	FAC	**30**	30
√*Trifolium repens*	FACU	**24**	**54**
√*Rumex crispus*	FAC	**20**	74
Carex obnupta	OBL	12	86
Picris echiodes	FACU	6	92
Polypogon monspielensis	FACW	4	96
Heliotropium curvassicum	FACU	4	100
		100	

√Dominant Species by "50/20 Rule"

38

Judging Predominance: Dominance Ratio

Dominant species by 50/20 Rule:

Lolium perenne (FAC), *Trifolium repens* (FACU), and *Rumex crispus* (FAC)

Number of Dominant Species That Are OBL, FACW, or FAC:	2
Total Number of Dominant Species Across All Strata:	3
Percent of Dominant Species That Are OBL, FACW, or FAC:	66%

Predominance of Hydrophytes? YES (>50%)

39

SOMETIMES THE PLANTS LIE.

40

Factors that Reduce the Reliability of Field Indicators of Hydrophytic Vegetation

- Atypical situations where the vegetation has been removed or altered by human activities
- FAC species dominate the vegetation
- Community characterization based on only one or two species
- Delineation during the dry season when upland species may be abundant in seasonal wetlands
- Species growing in disturbed areas may not have the same indicator status as under natural conditions
- Vegetation present following disturbance may not be characteristic of the long-term community

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Staff Approach to Problem Areas

- Species listed as OBL, FACW, or FAC are presumed to be growing as "hydrophytes"
- Where there is a predominance of OBL, FACW, or FAC species, the area is presumed to be a wetland
- In problem areas, the wetland presumption is rebuttable by compelling evidence of upland conditions.
- All pertinent evidence may be brought to bear on problem situations, but direct observations of hydrology during normal or unusually wet rainy seasons is most useful

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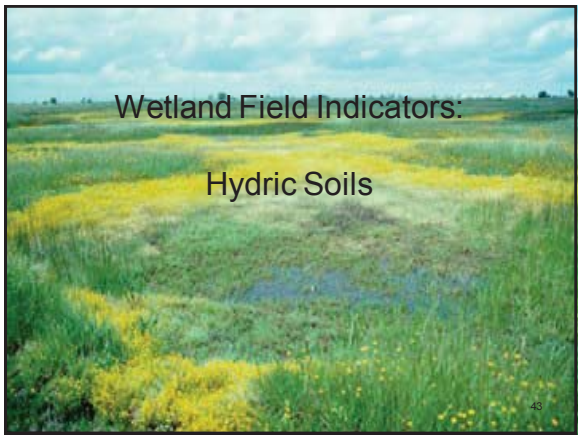

Development of Hydric Soils

Inundation or soil saturation

↓

Anaerobic conditions

↓

Chemical reduction (Fe, Mn, etc.)

↓

Distinctive soil characteristics

44

Hydric Soil Indicators

Field Indicator of Hydric Soils

F6. Redox Dark Surface

A layer at least 10 cm (4 in) thick entirely within the upper 30 cm (12 in) of the mineral soil that has:

a. matrix value 3 or less and chroma 1 or less and 2 percent or more distinct or prominent redox concentrations as soft masses or pore linings, or …

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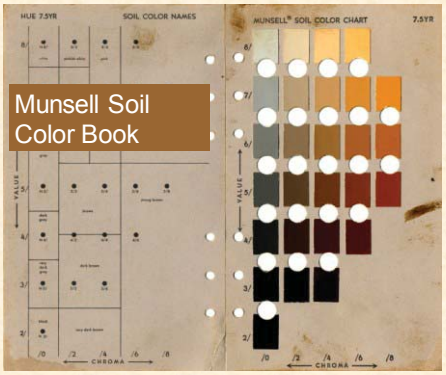

Factors that Reduce the Reliability of Field Indicators of Hydric Soils

- Soil characteristics, such as low iron content, that prevent the formation of hydric soil features
- Relict features where hydrology has been altered
- Dark coloration caused by high organics in grassland soils
- Soil disturbance that destroys or covers hydric soil features

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SUMMARY

- In the Coastal Zone, wetland delineation is always based on one wetland parameter, usually a preponderance of hydrophytes
- However, wetland parameters cannot be directly observed – their presence is inferred from field indicators that are subject to error
- In problem areas where critical field indicators of wetland parameters may not be reliable, all evidence must be considered
- Therefore, wetland delineation may require professional judgment

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Attachment G

M E M O R A N D U M

FROM: Jonna D. Engel, Ph.D., Ecologist

TO: Joseph Street, Environmental Scientist

SUBJECT: NRG Puente Power Plant Project, Oxnard, California

DATE: September 14, 2016

Documents Reviewed:

Love, Julie (AECOM). August 31, 2016. Wetland Technical Study Summary. Memorandum to Joseph Street, California Coastal Commission.

California Energy Commission (CEC), June 2016. Preliminary Staff Assessment Section 4.3 (Biological Resources), Application for Certification No. 15-AFC-01, NRG Oxnard Energy Center, LLC Puente Power Project (15-AFC-01).

On November 19, 2015, I visited the site of NRG's proposed Puente Power Plant ("P3") with NRG staff, California Energy Commission staff, and AECOM biologists. The site is just west of the existing Mandalay power plant in close proximity to the Pacific Ocean, McGrath Lake, and the Edison Canal. We walked the site and NRG staff described past uses such as staging and canal channel dredge spoils storage and how they, as well as the AECOM biologists, believe this may have influenced the soils and vegetation in the area. We also discussed the results of the wetland delineation performed in March 2015 which resulted in identification and mapping of a large area dominated by hydrophytic vegetation.

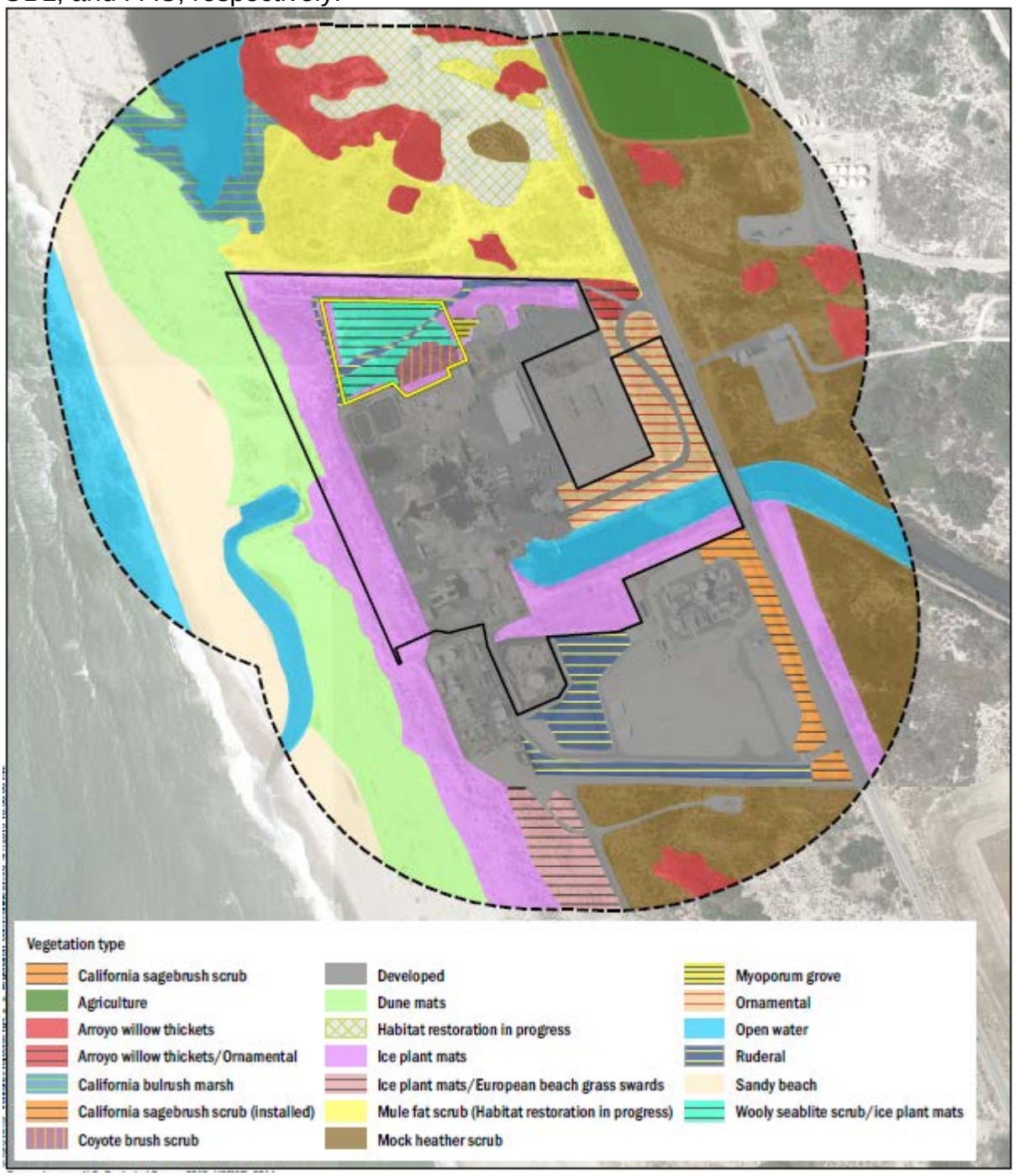
The Coastal Commission has a one parameter wetland definition; the Commission considers an area to be a wetland if it is positive for at least one of three wetland parameters; hydrophytic vegetation, hydric soils, or hydrology. As stated in the AECOM August 31, 2016 letter, "The Coastal Commission has issued regulations and guidance directing that the delineation of coastal wetlands should employ the three-parameter approach used by the USACE, but that a positive wetland determination can be made based on the presence of any one parameter, rather than requiring all three parameters to be present." AECOM performed a wetland delineation in March 2015 and found that three species of wetland plants dominated the area proposed for the power plant; woolly seablite (*Suaeda taxifolia)*, pickleweed (*Salicornia pacifica)*, and slenderleaf ice plant

(*Mesembryanthemum nodiflorum*) (Figure 1). The National Wetland Inventory identifies the wetland status of these plants as FACW, OBL, and FAC, respectively. During the November site visit I carefully examined the vegetation in the area proposed for the power plant and confirmed that the area mapped as "woolly seablite scrub/ice plant mat" is dominated by the three species of wetland plants identified by AECOM.

Whether the soil salt content and compaction and presence of salt marsh species result from past activities or natural processes or a combination of both is not relevant because, for purposes of conformance with Coastal Act Section 30233(a), the Commission evaluates wetland indicators at a site in its present state. In this case, the area is dominated by three plants with wetland indicator status; one (pickleweed) with obligate (OBL) status meaning it is found in wetlands greater than 99% of the time, one (woolly seablite) with facultative wet (FACW) status meaning it is found in wetlands 67 to 99% of the time, and one with facultative (FAC) status meaning it is found in wetlands between 34 to 66% of the time. If the site supported just one or two FAC species, we would consider the possibility of a false positive wetland determination. However, this is not the case at the proposed power plant site.

Based on the Commission's wetland definition, AECOM's wetland delineation, and my site visit observations, I find that the area identified by AECOM as "woolly seablite/ice plant mat" within of the area proposed for Puente Power Plant is wetland habitat (approximately 75% of the site).

Figure 1 (PSA Fig. 4-2.2, *Vegetation Communities)*. Proposed location for P3 outlined in yellow. More than 75% of the site is dominated by wetland vegetation including woolly seablite, pickleweed, and slenderleaf iceplant whose wetland status is FACW, OBL, and FAC, respectively.



Attachment H

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W4

California Coastal Commission
October 5, 2011 Briefing

Definition and Delineation of Wetlands in the Coastal Zone

Background Information Handout

How Does The California Coastal Act Protect Wetlands?

The California Coastal Act requires that most development avoid and buffer wetland resources. Policies include:

- **Section 30231**, which requires the maintenance and restoration (if feasible) of the biological productivity and quality of wetlands appropriate to maintain optimum populations of marine organisms and for the protection of human health.

- **Section 30233**, which limits the filling of wetlands to identified high priority uses, including certain boating facilities, public recreational piers, restoration, nature study, and incidental public services (such as burying cables or pipes). Any wetland fill must be avoided unless there is no feasible less environmentally damaging alternative, and authorized fill must be fully mitigated.

Why Do We Care About Wetlands?

Wetlands provide many important functions and values. These include:

- Supporting a large **diversity** of plant and animal species, including some that are found nowhere else except in wetlands.

- Providing **habitat** for hundreds of species of shore, wading, and migratory birds and for many commercial and non-commercial fish.
- Protecting **water quality** by serving as biological filters (a natural water treatment plant) absorbing and fixing certain chemical and mineral contaminants that would otherwise flow directly into lakes, rivers, streams, and the ocean.
- **Protecting the shoreline** by buffering the coast from waves and storms.
- Serving as a water conveyance and holding system, including providing **floodwater storage**.
- Allowing for **groundwater recharge**.
- Providing areas for **recreational activities** (fishing, boating, etc.).
- Enhancing viewsheds through contributing to **aesthetic values**.

How Do We Define Wetlands?

There is no single agreed-upon general definition of wetlands, although most definitions are similar. **Coastal Act Section 30121** defines the term "wetland" as:

> *[L]ands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens*.

Similarly, the **U.S. Fish and Wildlife Service** (USFWS) uses a general definition from its wetlands classification system first published in 1979:

> *Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water (Cowardin, et al. 1979).*

For purposes of implementing Section 404 of the federal Clean Water Act, the United States **Environmental Protection Agency** (EPA) and the **Army Corps of Engineers** (ACOE) define wetlands as:

> *Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas (40 CFR 232.2).*

One Parameter Definition

Both the Coastal Commission and the federal government provide further specificity in their wetlands definitions to guide the process of wetlands delineation. The Coastal Commission's

regulations (California Code of Regulations Title 14 (14 CCR)) establish a **"one parameter definition"** that only requires evidence of a single parameter to establish wetland conditions:

> *Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. (14 CCR Section 13577)*

The Commission's one parameter definition is similar to the USFWS wetlands classification system, which states that wetlands must have **one or more** of the following three attributes:

> *(1) at least periodically the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.*

Three Parameter Definition

In contrast, the Army Corps of Engineers generally uses a **three parameter definition** for delineating wetlands. As discussed in the 1987 ACOE Wetlands Delineation Manual:

> *The FWS system requires that a positive indicator of wetlands be present for any one of the three parameters, while the [ACOE] technical guideline for wetlands requires that a positive wetland indicator be present for each parameter (vegetation, soils, and hydrology)…(ACOE, 1987, p.3).*

How Do We Delineate Wetlands?

As opposed to wetlands definitions, which describe the general **parameters** that must be shown to establish wetland conditions (hydrology, soils, and vegetation), the delineation of wetlands in the field typically requires substantial evidence of **indicators**, which are the physical, chemical, or biological features of an area that can be easily observed or assayed and that are usually correlated with the presence of a wetland parameter; and **methodologies** that guide the process of distinguishing wetland from non-wetland conditions. Such field tools are needed because the various characteristics of wetlands typically occur on physical gradients (i.e., wet to dry conditions, hydric to nonhydric soils, and hydrophytic to meso/xerophytic vegetation).

The Coastal Commission's regulations acknowledge these distinctions by specifying some general decision rules for establishing the upland boundary of wetlands:

…the upland limit of a wetland shall be defined as:

a. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;

b. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or

c. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not. (14 CCR Section 13577)

However, the Coastal Commission's regulations do not provide guidance on other specific concerns important to the delineation process for wetlands, such as:

- What are hydric soils?
- What is hydrophytic vegetation?
- How do we determine if land is saturated at some time during years of normal precipitation?
- What is a predominance of hydrophytic cover?

Therefore, additional scientific methods and guidance are required to facilitate the wetland delineation process in the field. A common source of guidance for wetland delineators is the ***1987 Army Corps of Engineers Wetland Delineation Manual***. In addition to discussion of definitions and scientific concepts applicable to wetlands delineation, this manual includes detailed discussions of potential data sources, various field methods such as vegetation mapping, and so forth. The 1987 Manual has been updated and improved through the development of Regional Supplements that address regional wetland characteristics and contain improved field procedures. In California, the supplements that are used are "Western Mountains, Valleys, and Coast Region" and "Arid West Region.".

Another important guidance document is the U.S. Fish and Wildlife Service's ***List of Plant Species that Occur in Wetlands***. According to the USFWS, this document lists plant species "that have demonstrated an ability…to achieve maturity and reproduce in an environment where all or portions of the soil within the root zone become, periodically or continuously, saturated or inundated during the growing season." In the future, maintaining and updating this document will be the responsibility of the Army Corps of Engineers. Guidance on the identification of hydric soils is provided by the Natural Resource Conservation Service in its ***Field Indicators of Hydric Soils in the United States***.

Notwithstanding the availability of various technical guidance documents on wetlands and delineation methods, it is important to recognize that the application of scientific methods and the observations of indicators in the field are subject to uncertainty and error. This is particularly the case in atypical situations such as areas where wetlands hydrology, soils, or vegetation have been sufficiently altered to preclude the presence of an indicator of a particular

parameter. Therefore, wetland delineators must also exercise **professional judgment** in the wetland delineation process.

What Are Some Important Wetland Terms?

[Definitions are adapted from ACOE's *1987 Army Corps of Engineers Wetland Delineation Manual* unless otherwise noted.]

Aerobic. A situation in which molecular oxygen is a part of the environment.

Anaerobic. A situation in which molecular oxygen is absent (or effectively so) from the environment.

Atypical situation. Areas in which one or more parameters (vegetation, soil, and/or hydrology) have been sufficiently altered by recent human activities or natural events to preclude the presence of wetland indicators of the parameter.

False Negative. Failing to identify a wetland when it is present.

False Positive. Falsely concluding that an upland area is a wetland.

Hydric soil. Soil that is formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part. The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation (NRCS, http://soils.usda.gov/use/hydric/intro.html).

Hydrologic zone. An area that is inundated or has saturated soils within a specified range of frequency and duration of inundation and soil saturation.

Hydrophyte. Any plant growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content (Cowardin et al, 1979).

Wetland Plant Indicator Categories. (U.S. Fish & Wildlife Service National Wetlands Inventory (http://www.fws.gov/nwi/bha/l96_intro.html))

Obligate Wetland (OBL). Occur almost always (estimated probability >99%) under natural conditions in wetlands.

Facultative Wetland (FACW). Usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.

Facultative (FAC). Commonly occur in wetlands and non-wetlands (estimated probability of occurring in wetlands 34%-66%).

Facultative Upland (FACU). Usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).

Obligate Upland (UPL). Occur in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

Indicator. Field indicators are physical, chemical, or biological features of an area that can be easily observed or assayed and that are usually correlated with the presence of a wetland parameter.

Macrophyte. Any plant species that can be readily observed without the aid of optical magnification. This includes all vascular plant species and mosses (e.g., *Sphagnum spp*.), as well as large algae (e.g. *Chara spp*., kelp).

Mesophytic. Any plant species growing where soil moisture and aeration conditions lie between extremes. These species are typically found in habitats with average moisture conditions, neither very dry nor very wet.

Mottles. Spots or blotches of different color or shades of color interspersed within the dominant color in a soil layer, usually resulting from the presence of periodic reducing soil conditions.

Oxidation-reduction process. A complex of biochemical reactions in soil that influences the valence state of component elements and their ions. Prolonged soil saturation during the growing season elicits anaerobic conditions that shift the overall process to a reducing condition.

Parameter. A characteristic component of a defined unit. Vegetation, soil, and hydrology are three parameters that may be used to define wetlands.

Positive wetland indicator. Any evidence of the presence of hydrophytic vegetation, hydric soil, or wetland hydrology in an area.

Nonhydric soil. A soil that has developed under predominantly aerobic soil conditions. These soils normally support mesophytic or xerophytic species.

Plant community. All of the plant populations occurring in a shared habitat or environment.

Predominant (=prevalent) vegetation. The plant community or communities that occur in an area during a given period. The predominant vegetation is characterized by the dominant macrophytic species that comprise the plant community.

Redoximorphic features. Features formed by the processes of reduction, translocation, and/or oxidation of Fe and Mn oxides; formerly called mottles and low-chroma colors (USDA).

Saturated soil conditions. A condition in which all easily drained voids (pores) between soil particles in the root zone are temporarily or permanently filled with water to the soil surface at pressures greater than atmospheric.

Upland. Any area that does not qualify as a wetland because the associated hydrologic regime is not sufficiently wet to elicit development of vegetation, soils, and/or hydrologic characteristics associated with wetlands.

Wetland hydrology. The sum total of wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation.

Wetland plant association. Any grouping of plant species that recurs wherever certain wetland conditions occur.

Wetland soil. A soil that has characteristics developed under reducing conditions, which exist when periods of prolonged soil saturation result in an anaerobic state. Hydric soils that are sufficiently wet to support hydrophytic vegetation are wetland soils.

Wetland vegetation. The sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.

Xerophytic. A plant species that is typically adapted for life in conditions where a lack of water is a limiting factor for growth and/or reproduction. These species are capable of growth in extremely dry conditions as a result of morphological, physiological, and/or reproductive adaptations.

Selected References

- Cowardin, L. M., Carter, V., Golet, F. C., and LaRoe, E. T. 1979. “Classification of Wetlands and Deepwater Habitats of the United States,” FWS/OBS79/31, U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C.
- Environmental Laboratory. (1987). “Corps of Engineers Wetlands Delineation Manual,” Technical Report Y-87-1, U.S. Army Engineer Waterways Experimental Station, Vicksburg, MS.
- U.S. Department of Agriculture, Natural Resources Conservation Service, 2005. National Soil Survey Handbook, title 430-VI. [Online] Available: http://soils.usda.gov/technical/handbook/

Attachment I

ARCADIS Design & Consultancy for natural and built assets

Imagine the result

MPL Property Holdings LLC

North Shore at Mandalay Bay McGrath Parcel Restoration Year 7 (2015) Mitigation Monitoring Report

Ventura County, California

western burrowing owl (*Athene cunicularia*), yellow warbler (*Dendroica petechia*), two-striped garter snake (*Thamnophis hammondii*) , and silvery legless lizard (*Anneilla pulchra*). The value and importance of the Site to both resident and migratory wildlife in the area cannot be overemphasized.

8.3.1 Avian Survey Results

Avian surveys were conducted in May, June, and August 2014 and March, April, June and July, 2015 following the methods described in Section 4.1 and results are presented in Table 5.

A total of twenty-six avian species were observed at the Site during the surveys. The most frequently recorded species were the common yellowthroat (*Geothlypis trichas*) and song sparrow (*Melospiza melodia*), which comprised 13% and 12% of the total observations respectively, followed closely by the Anna's hummingbird (*Calypte anna*), representing 11 % of the total observations. The house finch (*Carpodacus mexicanus*) was the most numerous avian species observed (85 individuals) followed by the bushtit (*Psaltriparus minimus*), with 38 observed individuals. A total of 4 American crows (*Corvus brachyrhynchos*) were recorded during the surveys. There were no observations of common ravens (*Corvus corax*). At least two other special status species, the western burrowing owl (*Athene cunicularia*) and white-tailed kite (*Elanus leucurus*) are known to occur on the Site seasonally or intermittently, however these species were not observed during surveys for the 2015 reporting period.

8.3.2 Soil Invertebrate Survey Results

Soil invertebrate surveys were conducted in August 2014, and in March, April, July, and August 2015 following the methods described in Section 4.1 and results are presented in Table 6.

One species of darkling beetle (family Tenebrionidae) accounted for 32% of the survey captures. The remainder of the captures (40%) were represented primarily by isopods, including pill bugs (*Armadillidium vulgare*) and wood louse (family Oniscidae); other beetle species; field crickets (family Grillidae); Jerusalem crickets (family Stenopelmatidae); and spiders (Order Araneae). There were 10 pillbugs captured during the survey and no European earwig (*Forficula auricularia*) captures.

9 Sensitive Resources on Site

A number of sensitive wildlife species have been observed at the McGrath Site over the past decade or more (Impact Sciences 1998, CWIS 2009, CDFW 2015, Arcadis surveys 2009-2015). These include the following species listed in order of protected status: California least tern (*Sternula antillarum brownie*; federal and state endangered; McGrath State Beach); least Bell's

vireo (*Vireo bellii pusillus*; federal and state endangered; immediately south of North Shore parcel); Belding's savannah sparrow (*Passerculus sandwichensis beldingi*, state endangered; McGrath State Beach) western snowy plover (*Charadrius alexandrinus nivosus*; federal threatened; McGrath State Beach); western burrowing owl (*Athene cunicularia*; California species of special concern); loggerhead shrike (*Lanius ludovicianus*; California species of special concern); Cooper's hawk (*Accipiter cooperii*; California species of special concern); San Diego black-tailed jack rabbit (*Lepus californicus bennettii*; California species of concern); silvery legless lizard (*Anniella pulchra pulchra*; California species of special concern); two-striped garter snake (*Thamnophis hammondii*; California species of special concern); globose dune beetle (*Coelus globosus*); and sandy beach tiger beetle (*Cicendela hirticollis gravida*, McGrath State Beach).

This list does not include several sensitive bird species that may occur briefly as transients through the Site (e.g., brown pelican (*Pelecanus occidentalis;* federal and state delisted), peregrine falcon (*Falco peregrines*; federal delisted), northern harrier (*Circus cyaneus*; California species of special concern) or whose sensitivity status is associated with nesting or rookery activity not documented at the Site (e.g., great egret, great blue heron).

Also present on the Site are two plant species with CNPS rarity rankings (CNPS 2015) and one additional plant species considered rare by regional botanists in Ventura County (County of Ventura 2012): southwestern spiny rush; South Coast branching phacelia; beach saltbush (*Atriplex leucophylla*).

9.1 Sensitive Vegetation Types

Arcadis has observed several sensitive vegetation types on the McGrath Site, including: Dune mat -- *Ambrosia chamissonis - Abronia umbellata* Herbaceous Alliance; Yerba mansa meadows - *Anemopsis californica* Herbaceous Alliance; and creeping ryegrass turfs - *Elymus [Leymus] triticoides* Herbaceous Alliance – S3. All wetlands in the coastal zone of Ventura County are protected by the Ventura County Local Coastal Program (2008).

The vegetation types listed below have a California state ranking of S1, S2, or S3, which are considered to be "threat" ranks in the California Natural Diversity Database (CNDDB 2015). Note that higher ranks are designated with lower numbers. The state ranking system addresses the estimated number of existing acres for the sensitive habitat, as well as the threat to the acreage as determined by the CDFW.

S1 = Less than 2,000 acres