Table 3-4 Operational Criteria Pollutant Emissions

Source	Peak Day Emissions, lbs/day					
	VOC	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Offsite Mobile Sources	0.12	0.04	2.52	0.00	0.04	0.01
Vegetation Mowing	0.10	0.03	2.36	0.01	0.01	0.01
Totals	***0.22***	***0.07***	***4.88***	***0.01***	***0.05***	***0.02***
SCAQMD CEQA Thresholds	55	55	55	150	150	55
Exceed Threshold?	No	No	No	No	No	No
Localized Thresholds (lbs/day)[1]		197	1,711		4	2
Exceed Localized Thresholds?		No	No		No	No

1. Localized Thresholds based upon SCAQMD Lookup Tables, for North Coastal Orange County, 5- acre site, 25 meters to receptor. Localized emissions thresholds do not include mobile emissions.
2. Construction emission estimates calculated using CalEEMod Version 2022.1.1.29.
3. See Appendix E for CalEEMod output files.

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? (Less Than Significant Impact)

The only odor-causing emissions that might occur would be from construction equipment and would likely be associated with diesel exhaust. This would be temporary in nature and would cease once construction is complete. The limited amount and size of the construction equipment would not typically be considered to emit significant odors. The nearest residential home to the proposed Project site is about 480 feet, which would also serve to limit exposure to any construction equipment odors. Also, construction of the project would have to comply with SCAQMD Rules regarding odors and emissions from construction equipment and should result in less than significant impacts.

Avoidance, Minimization and/or Mitigation Measures

Mitigation Measure AQ-1: Short-Term Construction Emission Reduction Measures – During construction activities, the contractor shall ensure that measures are complied with to reduce short-term (construction) air quality impacts associated with the Project: a) controlling fugitive dust by regular watering or other dust palliative measures (such as covering stock piles with tarps) to meet South Coast Air Quality Management District (SCAQMD) Rule 403 (Fugitive Dust); b) maintaining equipment engines in proper tune and use Tier-4-rated heavy equipment; c) enforce 5-minute idling limits for both on-road trucks and off-road equipment; and d) sweep streets daily if visible soil material is carried out from construction site.

3.4.4 Biological Resources

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified	☐	☐	☒	☐

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
	in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?				
c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

The Project site has been previously graded as part of past oil and gas development projects, and areas of the Project site within 100 feet of oil field facilities/equipment are periodically disked for fuel modification. The area subject to temporary and permanent surface disturbance for the proposed Project totals about 4.57 acres. Biological surveys of the proposed solar panel array site were conducted, and a `wetland delineation of the site was prepared (multiple surveys conducted in July, August, and October 2022, and February and March 2023). The surveys were conducted for the 4.57-acre project site and a 100-foot buffer around the site, which together comprise a 12.46-acre study area. The wetland delineation found that neither the 4.57-acre gas solar panel array site nor the areas within a 100-foot buffer around the perimeter of the Project site support wetlands as defined under the Coastal Act. Focused botanical surveys detected southern tarplant (*Centromadia parryi* ssp. *australis*), a California Rare Plant Rank (CRPR) 1B.1 taxon, in the Project site and 100-foot buffer, and Coulter's goldfields *(Lasthenia glabrata* ssp. coulteri, CRPR 1B.1) in the 100-foot buffer. The least Bell's vireo (*Vireo bellii pusillis*), a state and federally listed endangered bird species was detected during biological surveys in an off-site water quality basin which is partially within the 100-foot buffer.

Appendix F contains a detailed Biological Technical Report for the proposed Project (Glenn Lukos Associates, 2023). The report includes a Jurisdictional Wetland Delineation Report as well as a detailed Southern Tarplant Mitigation and Monitoring Plan. The remainder of this section presents summary of the finding in the biological Technical Report.

a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? (Less Than Significant Impact with Mitigation Incorporated)

Special-Status Plants

No federal or state listed, or candidate plant species identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service were

detected on the project site and the site does not exhibit suitable habitat for such species. The site does support two CRPR special status plant species, assigned by the CDFW and California Native Plant Society (CNPS), including southern tarplant and Coulter's goldfields.

In the areas of the project site not subject to ongoing fuel modification, 57 individuals of southern tarplant were detected during focused surveys in the temporary impact area and 26 individuals of southern tarplant were detected in the permanent impact area of the 4.57-acre solar panel array site; therefore, construction would impact a total of 83 individuals. An additional 532 individuals were detected in the Study Area that are not in the existing fuel modification areas and would be avoided by the Project. It is important to note that southern tarplant is an annual plant species that is highly adapted to disturbance as evidenced by the occurrence of the 83 individuals within the highly disturbed solar panel array site. It is likely that southern tarplant will re-establish within the temporary disturbance areas given the presence of a seed source adjacent to the disturbance area. The loss of the 83 southern tarplant individuals from such a highly disturbed area would be a less than significant impact with mitigation incorporated.

Coulter's goldfields were not detected in the proposed Project permanent or temporary impact areas during the recent surveys but were present in the 100-foot buffer area. Based upon the surveys, Coulter's goldfields would not be impacted by the proposed Project since it was outside of the area that would be impacted by the project activities.

No other special-status plants were detected within the proposed Project area and none are expected to occur.

Special-Status Animals

No candidate, sensitive, or special status animal species identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service were detected on the project site and the site does not exhibit suitable habitat for such species.

The 100-foot buffer around the site includes a portion of an off-site water quality basin in which the state and federally listed endangered least Bell's vireo was detected during past biological surveys. The noise analysis in Section 3.4.13 shows that the peak noise from various construction activities could be as high as 96 dBA at the property line with the Heron Pointe bioswale. This level of noise could result in indirect impacts to nesting least Bell's vireo. A mitigation measure has been included that limits the noise generating construction activities to outside the bird nesting season. Therefore, indirect impacts to least Bell's vireo from construction noise would be a less than significant impact with mitigation incorporated.

A wintering Burrowing Owl (*Athene cunicularia)* was reported during site visits conducted on December 9 and 19, 1996 and on January 16, 1997. Follow-up breeding season surveys in spring of 1997 confirmed that this wintering individual had departed the site. This species was not detected during surveys in 2004 on the Hellman Property for the Tank Farm Relocation project. As no suitable man-made structures or rodent burrows were observed in the Study Area in 2022, this species is not expected to occur. However, given the historic wintering burrowing owl occurrences in the Hellman Property, future occurrences cannot be ruled out. Mitigation has been included to conduct surveys for the Burrowing Owl prior to construction. Impacts on Burrowing Owls would be less than significant with mitigation incorporated.

b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? (Less Than Significant Impact)

A total of 15 vegetation land use types were mapped within the 12.46-acre survey area, which includes the Project Impact Area and 100-foot survey buffer area. Development of the proposed Project would

result in direct impacts to eight vegetation/land use types totaling 4.57 acres as shown in Table 3-5. The survey buffer area contains one special-status vegetation type, the *Cressa truxillensis–Distichlis spicata* herbaceous alliance identified as a sensitive natural community by the CDFW. However, none of the impacted vegetation types are considered special status by either CDFW or the CEQA Thresholds Guide, therefore, impacts would be less than significant.

c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (No Impact)

No features subject to the jurisdiction of the Corps, CDFW, RWQCB, or wetlands defined under the California Coastal Act (CCA) are present within the proposed Project boundaries. Thus, there would be no impacts to state or federal wetlands from the construction of the proposed Project. See the detailed Jurisdictional Wetland Delineation Report that is part of Appendix F, Biological Technical Report.

Table 3-5 Summary of Impacts to the Proposed Project Vegetation/Land Use Types

Vegetation/Land Use Type	Permanent Impact Area (Acres)	Temporary Impact Area (Acres)	Total Project Impact Area (Acres)	Study Area (Acres)
Alkali heliotrope fields	0.04	0.06	0.1	1.11
Annual grassland/herbaceous semi-natural stands	0	0.02	0.02	1.2
Baccharis pilularis shrubland alliance	0	0.04	0.04	0.05
Disturbed *Baccharis pilularis* shrubland alliance	0	0	0	0.35
Bassia hyssopifolia association	1.55	0.88	2.43	3.54
Castor bean stands	0	0.03	0.03	0.05
Cressa truxillensis-Distichlis spicata herbaceous alliance	0	0	0	0.2
Distichlis spicata – annual grasses	1.05	0.61	1.66	3.23
Disturbed/Developed	0	0.22	0.22	2.51
Malvella leprosa fields	0	0	0	0.11
Mixed shrub seminatural stands	0	0	0	0.04
Ornamental	0	0	0	0.01
Raphanus sativus association	0	0	0	0.18
Salix lasiolepis – Baccharis salicifolia shrubland alliance	0	0	0	0.58
Tree tobacco stands	0.02	0.05	0.07	0.27
Total Vegetation/Land Use Acreage	**2.66**	**1.91**	**4.57**	**12.46**

See Appendix F-Biological Technical Report for a more detailed analysis.

d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (Less Than Significant Impact)

The Project site is not within a wildlife corridor and does not contain any native wildlife nursery sites. There is a hypothesis that migrating water-dependent bird species may potentially mistake the extensive solar arrays for water features on which the birds can land, usually at night. This is known as the "lake effect". Such collisions often do not result in direct fatality, but the birds sometimes cannot take off after collisions because they are adapted to take off from water, not dry land. Most studies of the potential

phenomena have been conducted at large scale solar PV facilities, which were hundreds of WMs in size and located in desert environments (Kosciuch. 2021).

The California Energy Commission (CEC) released a study in 2024 that investigated the "Lake Effect" influence on avian behavior from California's utility scale photovoltaic solar facilities. The study documented the results of a project that examined the so-called lake effect hypothesis that utility-scale solar facilities attract birds by simulating the visual cues birds use to locate water bodies. The study followed three interrelated themes matching the process by which birds could be attracted to solar facilities from: 1) detection by birds of an attractive cue such as polarized light that results in, 2) a corresponding adjustment in flight behavior toward a solar facility that, 3) leads to arrival and interaction of birds at solar facilities, potentially resulting in bird fatalities (CEC 2024).

The study focused on several large utility scale solar PV sites that were all located away from natural water bodies, with most being in desert locations. The sites looked at in the study ranged in size from about 50 MW to 328 MW.

The results indicate that birds are more attracted to highly polarized sources of visible light, and that solar panels polarize light in a manner similar to water. A large percentage of flying animals (perhaps 10 percent or more) approaching solar facilities from the north during daylight hours in the fall migration season were shown to descend toward facilities. Finally, and perhaps most compelling, is the observed mortality of water obligate species, which perish on dry land, found at PV solar facilities in desert environments without water. Taken together, these results are consistent with an operational lake effect hypothesis of avian mortality at arid solar facilities. (CEC 2024).

Given the relatively small size of the proposed Solar PV Project, and the fact that it is in close proximity (900 to 1,900 feet) to other water bodies (Haines Cooling Channel, San Gabriel River, Los Cerritos Southern Wetland, and the Pacific Ocean) the potential for the lake effect to impact migrating birds be highly unlikely. Additionally, mitigation measure AES-2 from the Aesthetics section will require solar panels to be constructed of dark-colored materials and covered with an anti-reflective coating, to further prevent glare that could be confused as a water surface. Given the project's limited size, the fact it is not located in an arid environment and is near a number of natural water bodies, the Project would not result in a significant impact to migratory birds.

There is the potential for the displacement of rodents (i.e., rats, ground squirrels, mice, etc.) that may inhabit the area where the proposed Solar PV facility would be installed. Installation of solar facilities have been known to displace rodent populations when the area is graded and the vegetation is removed for the installation of solar panels. Research suggests that solar panels may have indirect effects on rodent populations, particularly as solar farms replace agricultural fields or natural habitats, rodents may experience changes in their habitats, leading to shifts in population dynamics (Energy5 2023).

It has also been speculated that PV solar facilities can also create favorable microclimate and sheltered environment for rodents, which increased rodent population within the solar facility (Energy5 2023). During the biological surveys conducted at the project site, rodents were not observed, but rodents have been regularly seen on the Hellman Ranch Oil Field Property. The site of the proposed Solar PV facility is regularly disced and/or mowed for fire control, so it is unlikely that it currently supports a large rodent population.

There are large, vegetated areas between the closest residential area and the project site. It is possible that rodents could be displaced during the construction phase of the project. It is likely that any displacement would be into the surrounding vegetated areas such as the large Los Alamitos Retention Basin or the LCWA property, which are adjacent to the Solar PV Project site. Once the PV solar facility is

installed, the vegetation will be allowed to regrow, so the habitat could be suitable for some rodents. As is the current practice, the area would continue to be mowed on an annual basis for fire control.

Given the current conditions of the PS Solar facility site, and the fact that most of the surrounding area is vegetated, it is likely that any rodents displaced during construction would move to the surrounding vegetated area and not as far as the residential neighborhoods. Once construction is completed, it is likely that rodent populations that were displaced would be able to return. Therefore, the impact associated with rodent displacement would be less than significant.

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (No Impact)

The Project would not conflict with any local policies or ordinances protecting biological resources. With regards to potential environmentally sensitive habitat area (ESHA), the Coastal Act Section 30107.5 defines an 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.

Since the land cover on the solar panel array site consists of a mix of non-sensitive native vegetation and non-native herbaceous vegetation, including alkali heliotrope, non-native annual grasses, salt grass, *Bassia hyssopifolia*, developed areas, dirt roads, and staging areas, the site does not constitute ESHA and thus construction of the solar panel array would not directly affect ESHA. Similarly, areas within the 100-foot buffer portion of the study area consist of active oil extraction, including active wells, oil field infrastructure, and staging and equipment storage areas within a mosaic of non-native and non-sensitive native vegetation. As such, there would be no indirect impacts on ESHA.

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (No Impact)

The project site is not within an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Avoidance, Minimization and/or Mitigation Measures

Mitigation Measure BIO-1: Project Construction Timing – Construction activities associated with site preparation, support pile installation, and Solar PV System, Equipment, and Conduit Installation shall occur outside of the bird nesting season, which is generally identified as February 1 through September 15.

Mitigation Measure BIO-2: Grading Limitations– To the extent feasible, the project site shall not be graded. The vegetation on the project site shall be cleared using mowers or weed whackers.

Mitigation Measure BIO-3: Burrowing Owl Survey – A pre-construction (initial take avoidance) burrowing owl survey shall be conducted by a qualified biologist no less than 14 days prior to initiating ground disturbance activities using the recommended methods described in the 2012 Department of Fish and Game Staff Report on Burrowing Owl Mitigation. If the pre-construction survey is positive for owl presence, the project proponent will immediately inform the Wildlife Agencies (CDFW, USFWS) to acquire proper avoidance measures, including the possibility of preparing a Burrowing Owl Protection and

Relocation Plan, prior to initiating ground disturbance. If the species is not found, no further action is needed.

Mitigation Measure BIO-4: Southern Tarplant and Coulters goldfields Preconstruction Surveys – Prior to the initiation of construction activities, a City approved biologist shall conduct preconstruction surveys for southern tarplant and Coulter's goldfields during the appropriate season for each species to determine final mitigation requirements. These surveys shall cover the entire project area as well as a buffer area of 100-feet outside the construction boundaries. If Coulters goldfields are detected in the Project impact area, then the Southern Tarplant Mitigation and Monitoring Plan will be amended to include mitigation for Coulter's goldfields at a 4:1 ratio at a location with suitable habitat for the species.

Any populations of Coulter's goldfields or southern tarplant within the 100 foot buffer zone or within the construction area that can be avoided, shall be demarcated with construction fencing. No vegetation clearing, ground disturbance, or other construction activities shall occur in the fenced areas or within 30 feet of any Coulter's goldfields.

Mitigation Measure BIO-5: Southern Tarplant Mitigation and Monitoring Plan – Prior to impacts to the southern tarplant in the Project site, a biologist, approved by the City, shall implement the measures contained in the Southern Tarplant Mitigation and Monitoring Plan (see Appendix F), which provides for replacement of the impacted 83 individuals at a ratio of 4:1, for a total of 332 individuals. However, if pre-construction surveys determine that total numbers of impacted individuals has changed, the total number of replacement individuals shall be adjusted accordingly at a 4:1 ratio. The plan identifies a candidate area of the Hellman Property where southern tarplant may be established and preserved in perpetuity. The plan includes provisions for seed collection, planting, performance standards for a five-year monitoring period, and contingency plans if the performance standards are not met.

3.4.5 Cultural Resources

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☒	☐	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☒	☐	☐
c)	Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☒	☐

This section analyzes impacts on historical and archeological resources in the Project site. Section 3.4.18 discusses the potential impacts of the proposed Project on Tribal Cultural Resources. The Project site has been previously assessed for cultural resources as part of past oil and gas development projects. The area that would require surface disturbance for the proposed Project would be approximately 4.57 acres. Appendix G provides a Cultural Resources Assessment Report for a Proposed Solar Array Project. This section presents a summary of the findings in the Cultural Assessment Report.