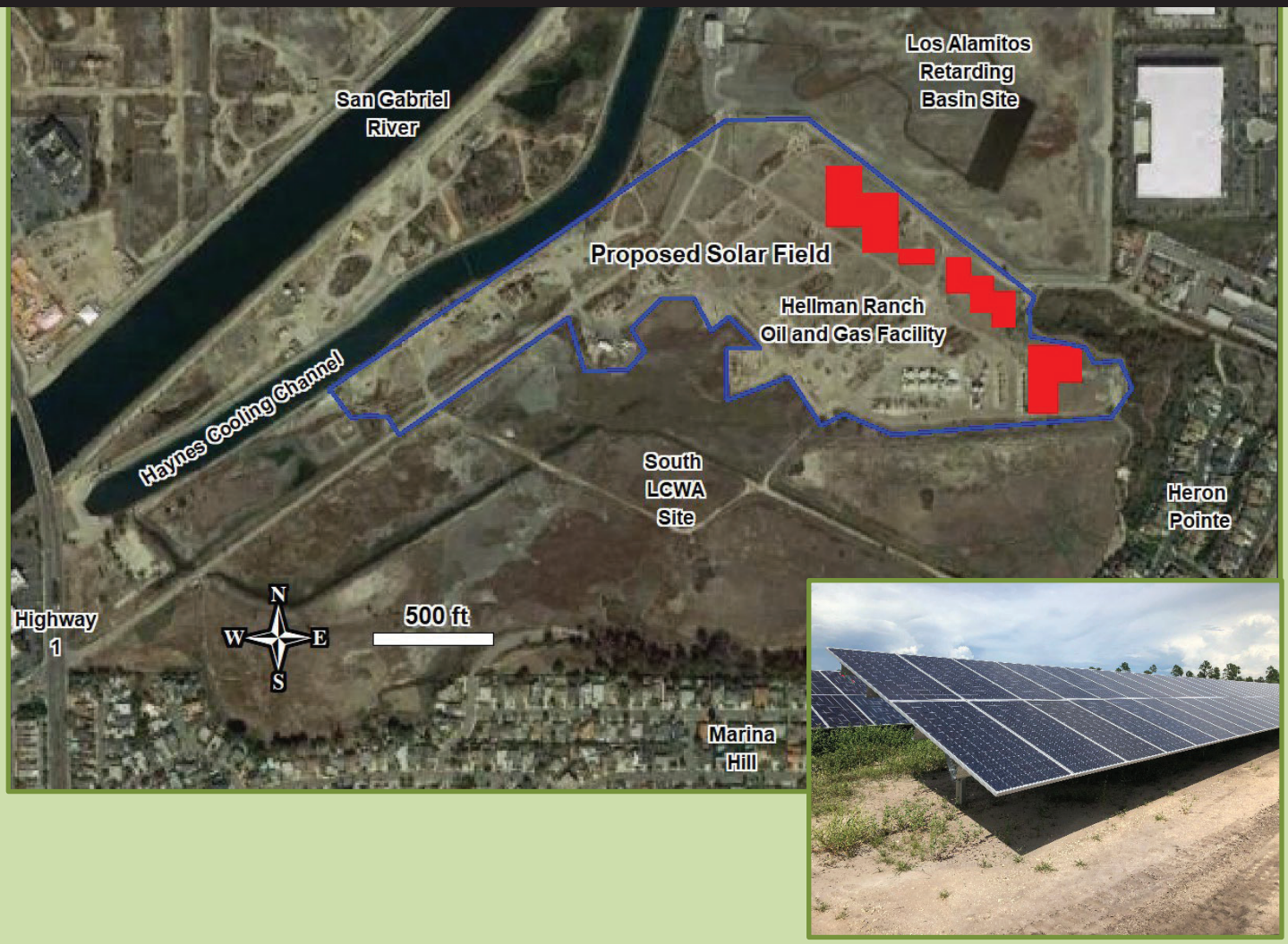
HELLMAN SOLAR PV ELECTRICAL SYSTEM PROJECT

DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION



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Table of Contents

1.0 Introduction 1
1.1 Project Location and Surrounding Land Uses 1
1.2 Purpose and Need for Project 3
1.3 Public Agency Approvals Required 4
2.0 Project Description 6
2.1 Project Components 6
2.1.1 Solar Panels and Support Structures 7
2.1.2 Collector Cables, Inverters, and Subpanels 7
2.1.3 Power Cables, Transformer, and Disconnect Switches 8
2.2 Project Construction 9
2.2.1 Temporary Construction Work Areas 10
2.2.2 Site Disturbance 10
2.2.3 Construction Phases 10
2.2.4 Construction Workforce, Schedule, and Equipment 13
2.3 Project Operations 14
2.4 Proposed Solar Facility Lifetime 14
3.0 Environmental Analysis 15
3.1 Environmental Checklist Form 15
3.2 Environmental Factors Potentially Affected 16
3.3 Environmental Determination 16
3.4 Evaluation of Environmental Impacts and Initial Study Checklist 17
3.4.1 Aesthetics 18
3.4.2 Agriculture and Forestry Resources 24
3.4.3 Air Quality 25
3.4.4 Biological Resources 28
3.4.5 Cultural Resources 34
3.4.6 Energy 37
3.4.7 Geology/Soils 39
3.4.8 Greenhouse Gas Emissions 44
3.4.9 Hazards and Hazardous Materials 46
3.4.10 Hydrology/Water Quality 48
3.4.11 Land Use/Planning 53
3.4.12 Mineral Resources 54
3.4.13 Noise 54
3.4.14 Population/Housing 57
3.4.15 Public Services 58
3.4.16 Recreation 59
3.4.17 Transportation 60
3.4.18 Tribal Cultural Resources 62
3.4.19 Utilities/Service Systems 65

3.4.20 Wildfire 68
3.4.21 Mandatory Findings of Significance 70
4.0 List of Reference Documents 74
5.0 List of Preparers 78

List of Table

Table 1-1 Permits or Other Actions Required for Implementation of the Proposed Project 4
Table 2-1 Summary of Solar Array Elements 7
Table 2-2 Inverter Pad Dimensions 8
Table 2-3 Transformer Pad Equipment Dimensions 9
Table 2-4 Proposed Project Site Disturbance Areas 10
Table 2-5 Construction Activities, Duration, Personnel, and Vehicle Trips 13
Table 2-6 List of Offroad Construction Equipment by Phase 14
Table 3-1 Summary of Analysis of Predicted Glare 23
Table 3-2 Attainment Deadlines for Federal Non-Attainment Pollutants 26
Table 3-3 Peak Day Construction Emissions by Phase 27
Table 3-4 Operational Criteria Pollutant Emissions 28
Table 3-5 Summary of Impacts to the Proposed Project Vegetation/Land Use Types 31
Table 3-6 Estimated Construction Equipment Fuel Use (gals) 38
Table 3-7 Project GHG Emissions (MT/yr.) 45
Table 3-8 Peak Construction Noise Levels 55
Table 3-9 Peak Operational Noise Levels 56
Table 3-10 Human Response to Transient Vibration 57
Table 3-11 Estimated Construction Equipment Vibration Levels 57
Table 3-12 Construction Vehicle Trips 61

List of Figures

Figure 1-1 Regional Map 2
Figure 1-2 Project Area Map 3
Figure 2-1 Location of Proposed Solar PV System on Helman Ranch OGPF Site 6
Figure 2-2 Typical Solar Array Tables 7
Figure 2-3 Proposed Solar Table Support Structures 8
Figure 2-4 Typical String Inverters 9
Figure 2-5 Proposed Solar PV Electrical System Footprint and Temporary Construction Areas 11
Figure 3-1 Current View from Gum Grove Park Looking North 19
Figure 3-2 View from Gum Grove Park with Simulation of Solar Facility 20
Figure 3-3 Location of Glare Analysis Observation Points 22
Figure 3-4 Alquist-Priolo Fault Zone 40
Figure 3-5 Geologic Compilation of Quaternary Surficial Deposits in the Project Area 43
Figure 3-6 City Waterlines in Vicinity of PV Solar Project 66

Appendices

Appendix A – Mitigation Monitoring Program
Appendix B – Hellman Solar PV Electrical System Drawings
Appendix C – Miscellaneous Support Calculations
Appendix D – Glare Analysis
Appendix E – CalEEMod Air Emission Output Files
Appendix F – Biological Technical Report
Appendix G – Cultural Resources Assessment Report

1.0 Introduction

This document provides an Initial Study and Mitigated Negative Declaration (MND) for the proposed Hellman Solar PV Electrical System Project. The proposed Project would consist of the installation and operation of a 1.5 megawatt (MW) fixed-tilt ground mounted solar photovoltaic (PV) system. This system would interconnect with the Hellman Property's electrical infrastructure and operate in parallel with the utility grid to provide sustainable clean energy in support of the facilities operations and export any excess power to the utility grid.

The proposed Project would require a Minor Use Permit (MUP) from the City of Seal Beach. The proposed Project requires compliance with environmental procedures (CEQA and CEQA Guidelines), with the City of Seal Beach serving as CEQA Lead Agency. The proposed Project would also require a Coastal Development Permit (CDP) from the California Coastal Commission.

The preparation of the Initial Study and MND is governed by two principal sets of documents: The California Environmental Quality Act (hereinafter "CEQA," *California Public Resources Code* §21000, et seq.) and the CEQA Guidelines (*California Code of Regulations* §15000, et seq.). The environmental analysis presented in this document primarily focuses on the changes in the environment that would result from the proposed Project. The environmental analysis also evaluates all phases of the Project, including construction and operation.

In compliance with state law and procedures, the City has determined that an MND is the appropriate environmental compliance document for the proposed Project. The Initial Study checklist form and explanation discussion format meets the requirements of the CEQA. Section 15063(d)(3) requires that the entries on the Initial Study checklist identifying environmental effects be briefly explained to indicate that there is some evidence to support the entries. An Initial Study/MND is not intended or required to include a level of detail that would be provided in an EIR. Therefore, in compliance with CEQA and the CEQA Guidelines, the IS/MND is not intended to be a lengthy, detailed document.

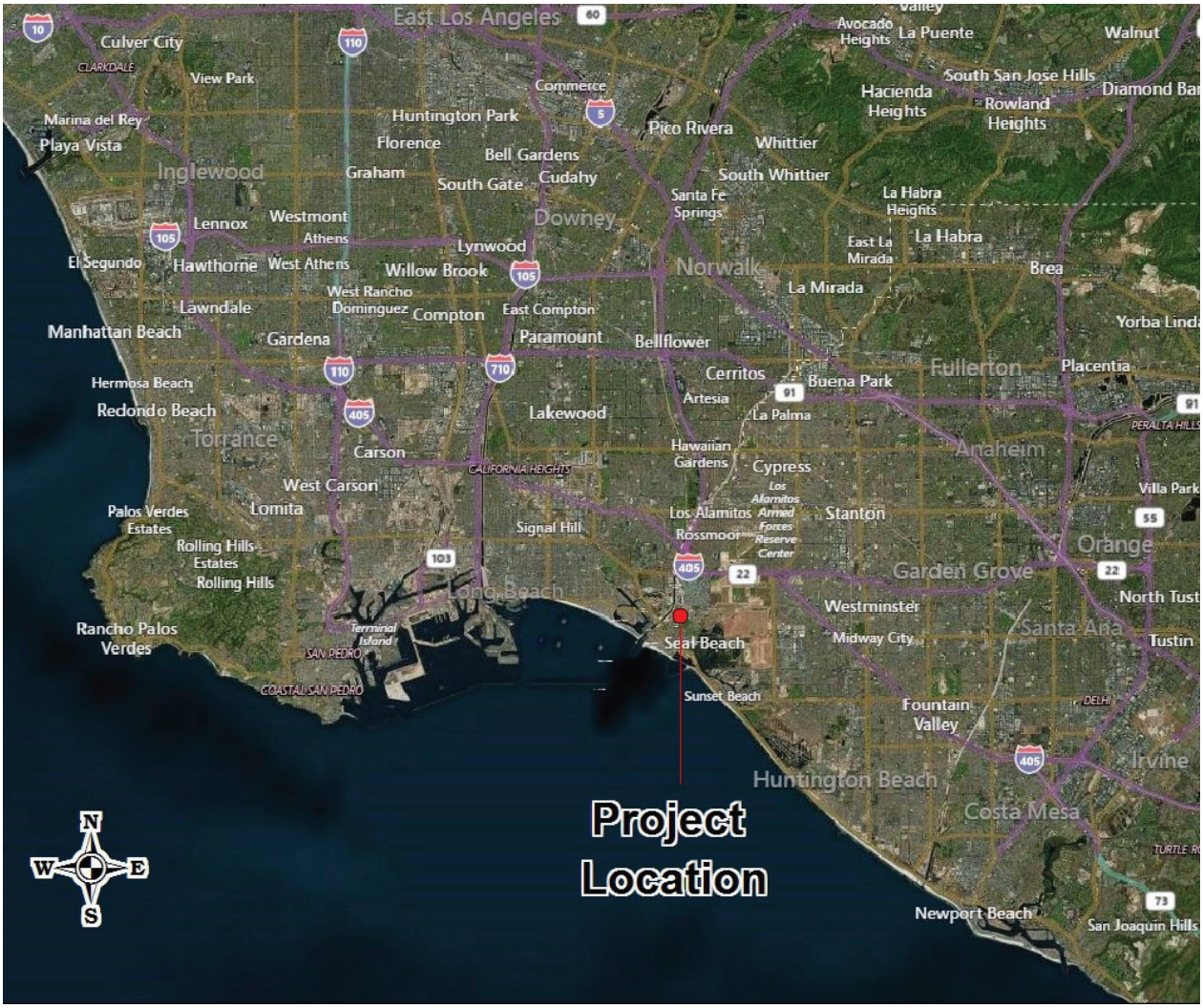
The CEQA Initial Study Checklist is used throughout Section 3.0, Environmental Analysis to assess the impacts of the proposed Project. Certain documents are incorporated by reference into this Initial Study/MND pursuant to CEQA Guidelines §15150. These documents are included in the refences listed in Section 4.0 of the document and are available for inspection at the City of Seal Beach offices. Several technical reports were used in developing the Initial Study/MND. These technical reports are included as Appendices to the Initial Study/MND.

1.1 Project Location and Surrounding Land Uses

The proposed Project site is located just north of First Street in the City of Seal Beach on parcel APN 95-010-68. The proposed Solar PV Electrical System would be located on a 4.66 acre site within the existing Hellman Ranch Oil and Gas Production Facility (OGPF). The existing Hellman Ranch OGPF site is located east of the San Gabriel River, and north of Pacific Coast Highway in the City of Seal Beach and covers about 57 acres. Seal Beach is located in the northwest portion of the County of Orange. A "Regional Map" is provided as Figure 1-1. Hellman Properties, LLC owns and operates the OGPF on the Hellman Ranch in Seal Beach, California, and would be the owner and operator of the proposed Solar PV Electrical System. A project area map is provided in Figure 1-2, that shows the location of the Hellman Ranch Oil and Gas facility property. The Hellman Ranch property is located within The City's Planning Area 2 and is zoned as Oil Extraction (OE).

The property to the south of the proposed Project site is owned by the Los Cerritos Wetland Authority. This property is about 100 acres in size and is zoned open space-natural (OS-N). The property to the north of the proposed Project site is owned by the County of Orange and serves as a regional retention basin. This property is about 43 acres in size and is zoned open space-natural (OS-N). To the west of the proposed Project site is the Department of Water and Power Haynes Cooling Channel. On the far west side of the channel is property owned by the Los Cerritos Wetland Authority, which is about 71 acres in size covering both sides of the San Gabriel River. This property is located within the City of Long Beach.

Figure 1-1 Regional Map



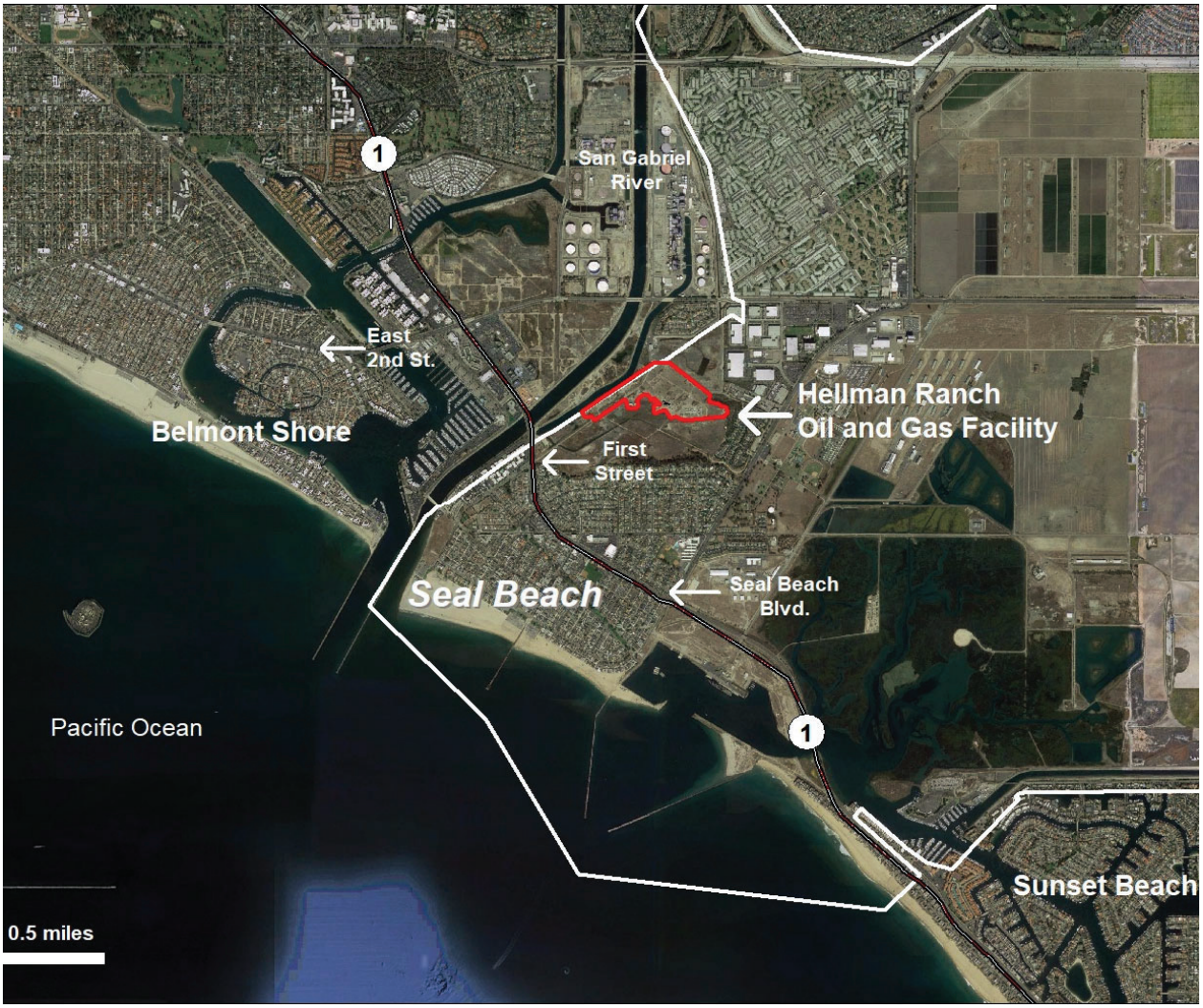
Source: Google, Google Earth data © Google 2023.

To the east of the proposed project property site is a small open space area that contains the Hellman Ranch Trail. This area is zoned open-space natural (OS-N). Just to the east of this open space is residential housing comprised of all single-family homes. This area is zoned Residential Low Density-9 (RLD-9).

1.2 Purpose and Need for Project

Currently, the electrical power used for the Hellman Ranch Oil and Gas facilities, and the other associated facilities, such as the offsite gas plant, production wells, pump stations, etc. is provided by an onsite gas turbine generator and Southern California Edison via a direct connection with their electrical grid system.

Figure 1-2 Project Area Map



Source: Google, Google Earth data © Google 2023.

Hellman Properties is proposing to install a 1.5 MW Solar PV Electrical System, which would interconnect with the Hellman Property's electrical infrastructure and operate in parallel with the utility grid to provide sustainable clean energy in support of the various Hellman Property facilities operations. Use of solar power to provide electrical power for the facility operations would serve to reduce overall air emissions associated with electrical power generation and reduce the overall operating cost of the Hellman facilities.

1.3 Public Agency Approvals Required

Table 1-1 provides a list of agencies that would need to issue permits for the proposed Solar PV Electrical System. The remainder of this section discusses the key public agencies that have permitting authority over the various operations at the Hellman Ranch Property.

City of Seal Beach

The proposed Project would be located within the City of Seal Beach, and the project would require a minor use permit (MUP) from the City. Section 11.2.15.010 of the City Municipal Code covers use regulations for the oil extraction district. Table 11.2.15.010 shows that a MUP is required for major utility projects within the oil extraction zone. The MUP would be subject to approval by the Planning Commission, whose decision can be appealed to the City Council.

Table 1-1 Permits or Other Actions Required for Implementation of the Proposed Project

Agency	Jurisdiction	Permit/Action
City of Seal Beach	CEQA Lead Agency, Land Use Authority	Certification of the IS/MND Minor Use Permit (MUP) Compliance Review and Construction Permits Operations Compliance
California Coastal Commission	Land Use Authority Under the Coastal Act for Projects within the Coastal Zone	Coastal Development Permit (CDP)
Regional Water Quality Control Board	Control of Stormwater Runoff from Construction Sites Greater than 1 Acre	Construction General Permit (CGP) and Stormwater Pollution Prevention Plan (SWPPP)

The City of Seal Beach, as the CEQA lead agency, will act first on the Project before any of the responsible agencies act on the Project. The City of Seal Beach decision-makers (Planning Commission and on appeal, the City Council) will use the IS/MND for decision-making regarding the proposed Project. If the proposed Project is approved by all required permitting agencies, the City would be responsible for reviewing and approving all pre-construction compliance plans and ensuring that the proposed Project modifications and operations are conducted in accordance with the Development Plan conditions.

California Coastal Commission (CCC)

The CCC issues Coastal Development Permits (CDP) for development within the City of Seal Beach's coastal zone since the City does not have an approved Local Coastal Plan (LCP). All the Hellman Ranch OGPF property is within the Coastal Zone. Coastal Development Permits are the regulatory mechanism by which proposed developments in the coastal zone are brought into compliance with the policies of Chapter 3 of the Coastal Act. The CCC has issued previous CDPs for the Hellman Ranch OGPF facilities, including the Hellman Ranch Tank Farm Replacement Project.

Regional Water Quality Control Board (RWQCB)

The Santa Ana Regional Water Quality Control Board (SARWQCB) is responsible for regulating stormwater at the Hellman Ranch OGPF. The existing Hellman Ranch OGPF operations currently operate under General Permit CAS000001 for Industrial Activities, which have Storm Water Pollution Prevention Plan (SWPPP) requirements. In the Orange County area, the stormwater program covers discharges from construction sites with land disturbance of 1 acre or more. Since the project site is larger than one-acre in size the Applicant would be required to submit a Notice of Intent to use the statewide National Pollutant Discharge Elimination System (NPDES) General Construction Activity Storm Water Permit. The existing SWPPP should be adequate to cover the construction and operation of the Solar PV Electrical System Project.

Orange County Fire Authority (OCFA)

The property is within the jurisdiction of the OCFA. The OCFA regulates combustible materials in Seal Beach. Hellman LLC has permits from the OCFA that allow the installation, construction, alteration and operation of oil and gas processing facilities. The OCFA also regulates the requirements for vegetation clearing at the Hellman Ranch OGPF. Hellman is required to clear vegetation within about 100 feet of all active oil and gas operating facilities, including production and injection wells. The installation and operation of the proposed Solar PV Electrical System would not require any modification of the current OCFA permits.

The California Geologic Energy Management Division (CalGEM)

CalGEM permits and oversees the production of oil and gas at the Hellman Ranch facility. Their primary focus of CalGEM is on the construction and operation of the oil/gas production wells and water injection wells, as well as reservoir issues. CalGEM would not regulate the construction and operation of Solar PV Electrical System. Therefore, the proposed Project would not require any permits for CalGEM.

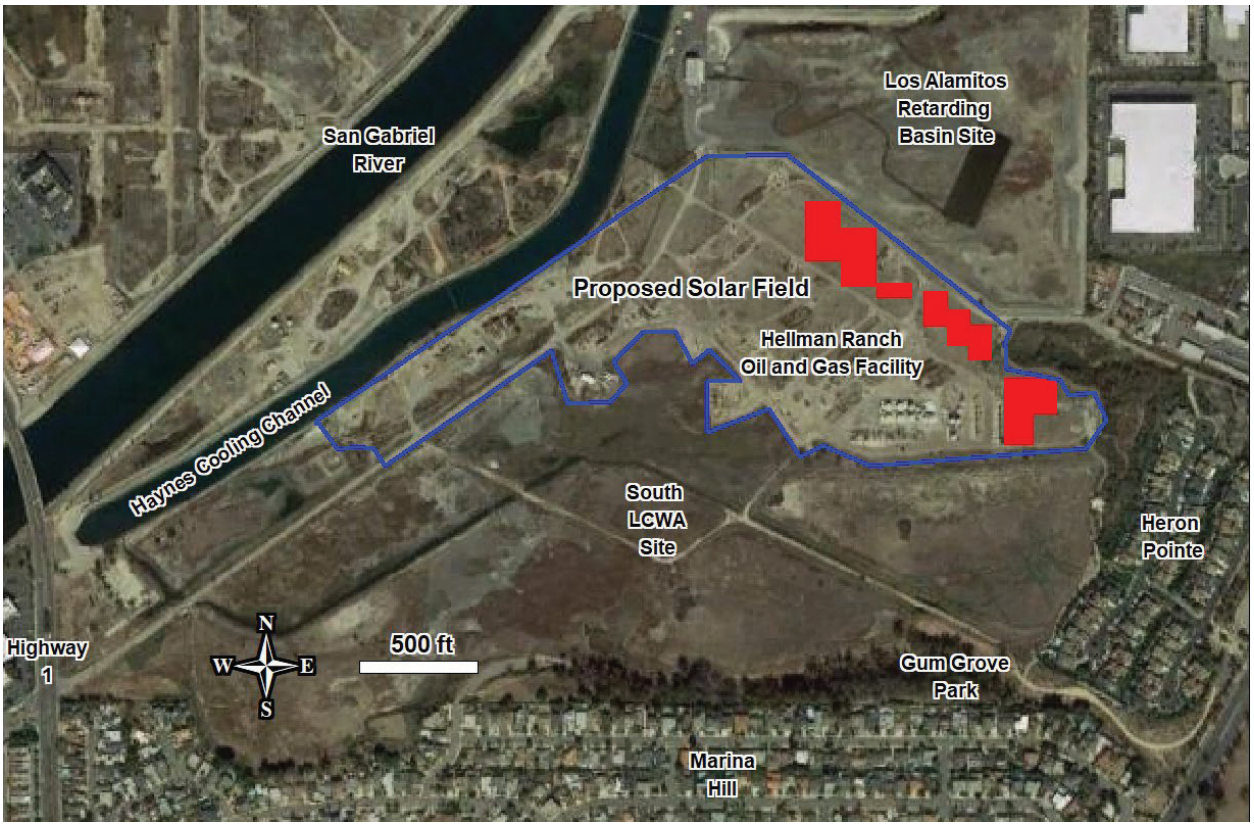
South Coast Air Quality Management District (SCAQMD)

The Hellman Ranch OGPF has several permits with the SCAQMD covering various air emitting equipment. No new air permits would be required for the construction and operation of the proposed Solar PV Electrical System since the project would have minimal operational air emissions and the construction emissions are below the threshold that would require a construction permit.

2.0 Project Description

The proposed Project would consist of the installation and operation of a 1.5 megawatt (MW) fixed-tilt ground mounted solar photovoltaic (PV) system on the Helman Ranch OGPF property. This system would interconnect with the Hellman Property's electrical infrastructure and operate in parallel with the utility grid to provide sustainable clean energy in support of the facilities operations. Electrical power generated in excess of Hellman facility needs would be exported to the SCE grid. Figure 2-1 shows location of the proposed solar PV system. The proposed system would be located on a 4.66 acre site within the existing Hellman Ranch OGPF. The system would be composed of 3 arrays with a total of 56 solar table structures supported by piles with concrete foundations. Appendix B provides detailed system drawings for the solar PV project.

Figure 2-1 Location of Proposed Solar PV System on Helman Ranch OGPF Site



Source: Google, Google Earth data © Google 2023.

2.1 Project Components

The major components of the solar system would include (1) the solar panels and support structures, (2) collector cables, inverters, and subpanels, and (3) power cables, transformer, and disconnect Switches. Each of these is discussed below.

2.1.1 Solar Panels and Support Structures

Solar energy would be captured by solar panels mounted to a fixed-tilt support structure. The system would be comprised of three arrays of solar tables. Table 2-1 provides a summary of the key elements of each of the solar arrays.

Table 2-1 Summary of Solar Array Elements

Array#	# Solar Tables	# Solar Panels	# Support Structures
Array 1	22	1,196	150
Array 2	17	952	119
Array 3	17	952	119
Total	***56***	***3,100***	***388***

Source: Hellman Plan Set 12-06-2022, Newport Power (see Attachment B).

All but one of the solar tables would be about 96.8 feet long by about 14.3 feet wide and would contain two rows of 28 solar panels. One of the solar tables in Array 1 would be about 34.6 feet long by about 14.3 feet wide and contain two rows of 10 solar panels. The solar tables would be tilted facing south at about a 10 degree angle. The front edge of the tables would be at a height of approximately 18-inches, with the back edge of the tables being at a height of about 50 inches. Figure 2-2 provides a picture of a typical solar array table.

Figure 2-2 Typical Solar Array Tables



Source: Newport Solar, QCells America

The larger tables would be supported by seven support structures. The one smaller table would be supported by three support structures. Each support structure would be attached to a metal pile that would be set six feet into the ground using concrete piers. The concrete piers would be about 18-inches in diameter. Figure 2-3 shows a picture of the type of solar table support structures that would be used for the proposed Project. The solar panels would be at a fixed tilt angle of 10 degrees facing the south.

2.1.2 Collector Cables, Inverters, and Subpanels

Underground collector cables, installed within trenches, would collect direct current (DC) power from each solar table and transport the power to a set of inverters. The inverters are used to convert the power

from DC to alternating current (AC). There would be a total of 16 inverters located on four separate concrete pads. One of the inverter pads would be located at solar array 1, one at solar array 2 and two pads at solar array 3. Table 2-2 provides the dimensions for the Inverter pads.

Figure 2-3 Proposed Solar Table Support Structures



Source: Newport Solar, SOL Components

Table 2-2 Inverter Pad Dimensions

Pad Type	Location	Length (ft)	Width (ft)	Depth (ft)
Inverter/PV Subpanel Pad #1	Array #1	38	5.5	0.33
Inverter/PV Subpanel Pad #2	Array #2	33	5.5	0.33
Inverter/PV Subpanel Pad #3	Array #3	17	5.5	0.33
Inverter/PV Subpanel Pad #4	Array #3	17.25	5.5	0.33

Source: Newport Power email dated 8-3-23.

Most of each pad would be located under a solar table, with approximately two feet extending beyond the edge of the solar table. The inverter pads would be located on the back side of a solar table. The inverter would feed alternating current (AC) to a transformer via underground cables. Figure 2-4 shows a typical layout for an inverter string that would service a set of solar tables.

One of the inverter pads at each solar array would also house a PV subpanel. The subpanels would house a main electrical beaker as well as a breaker for each of the inverters. This would allow each solar array or inverter to be isolated from the system for maintenance work. Attachment B, Hellman Properties Seal Beach Solar PV Electrical System Installation Drawings, provides more detail on the layout of the solar tables, inverters, and subpanels.

2.1.3 Power Cables, Transformer, and Disconnect Switches

AC power from the inverters would be sent via underground power cables to a central transformer station, which would adjust the AC voltage for transmission to the existing Hellman facility main electrical service panel, which connected to the Southern California Edison (SCE) system. The pad for the transformer would be about 12 feet wide by 33 feet long. The pad would also house a subpanel and two disconnect switches.

The disconnect switches would be located on either side of the transformer. The subpanel would house a main electrical beaker as well as a breaker for each of the solar arrays.

Figure 2-4 Typical String Inverters



Source: Newport Solar, Chint Power Systems

This would allow each solar array or the entire solar system to be isolated for maintenance work. Attachment B, Hellman Properties Seal Beach Solar PV Electrical System Installation Drawings, provides more detail on the layout of the equipment on the transformer pad. Table 2-3 provides the dimensions of the equipment that would be on the transformer pad.

Table 2-3 Transformer Pad Equipment Dimensions

Equipment	Length (ft)	Width (ft)	Height (ft)
Transformer	7.25	7.75	7.0
Subpanel	3.96	10.5	7.63
Disconnect Switch	2.5	3.33	7.17

Source: Newport Power email dated 8-14-23.

Approximately 600 feet of underground trench would be needed to connect the inverters to the transformer. The trench would be approximately 2 feet wide and contain two 5-inch conduits. The depth of the trench would vary between 18-inches and 24-inches, with the larger depth being in areas of road crossings. The powerlines connecting the transformer pad to the existing Hellman facility's main electrical service panel would be placed underground in a 2.5-inch conduit.

2.2 Project Construction

Construction of the proposed Solar PV Electrical System would take about three to four months to complete and would involve several phases. Figure 2-5 shows the proposed Project layout and associated

construction area. The remainder of this section discussed various aspects of the construction phase of the project.

2.2.1 Temporary Construction Work Areas

A temporary staging area would be required to stage equipment and supplies during construction as shown in Figure 2-5. The temporary staging would only be used during Project construction and would be restored to preconstruction conditions at the completion of construction. The area is currently an unpaved dirt pad. The staging area would be about 0.14 acres in size (120 feet x 50 feet) and would be entirely within the existing Hellman facility boundary. This area would be used for construction personnel parking, truck loading and unloading, and equipment and material delivery and staging. Heavy equipment not permitted on public roadways would be refueled on- site; however, fuel would not be stored overnight on the Project site. Equipment maintenance activities would be conducted off-site.

2.2.2 Site Disturbance

The area of temporary and permanent disturbance for each of the Project components is provided in Table 2-4. Areas of temporary disturbance include areas that would be allowed to revegetate following construction. The solar array area would be subject to limited grading during construction, but much of the solar array area would be allowed to naturally revegetate once the solar tables were installed. Temporary disturbance areas include temporary work areas and the portions of the project area are expected to revegetate after construction. The area of permanent disturbance includes the footprint of the solar arrays, and the equipment pads. While the area underneath and between the solar tables would be allowed to revegetate, it has been included in the permanent disturbance area.

Table 2-4 Proposed Project Site Disturbance Areas

Project Component	Temporary Disturbance (acres)	Permanent Disturbance (acres)	Total Disturbance (acres)
Solar Array Tables	1.48[b]	2.65[a]	4.13
Equipment Pads	0.00[c]	0.01	0.01
Underground Power Lines	0.29[d]	0.00	0.29
Staging Area	0.14	0.00	0.14
Total	**1.91**	**2.66**	**4.57**

a. Includes all areas within each solar array including the area under the solar tables.
b. Assumes up to 20 feet of temporary impact on all sides of the components, except where there is overlap.
c. Temporary impacts areas for equipment pads are included in the underground power lines.
d. Temporary impacted area is based upon the area of the trench work that is outside of the permanent or temporary impact areas of the solar arrays. Assumes 2 foot wide trench and 10 feet of work area on either side of trench.

Numbers may not add up due to rounding.
Appendix B provides detailed area calculations for the solar array tables.

2.2.3 Construction Phases

Construction of the proposed Project would involve several phases that include (1) site preparation; (2) support pile installation; (3) solar PV system, equipment, and conduit installation; and (4) testing and commissioning. Each of these phases is discussed below.

Figure 2-5 Proposed Solar PV Electrical System Footprint and Temporary Construction Areas



Source: Newport Solar

Site Preparation

The initial site preparation would involve removal of the vegetative cover, and the removal of any miscellaneous debris and other deleterious material. Organic matter and other material that may interfere with the completion of the work would be removed from the limits of the construction area. The site would require minimal grading since it is already flat and grading is not necessary for the installation of the solar support structures. Limited grading may be needed for the equipment pads areas. The project would not involve any cut and fill, or the import/export of any soil.

Portions of the site have already had vegetation removed as part of the required fuel modification program, which requires areas within 100 feet of oil wells, electrical equipment, and associated facilities to be periodically maintained to remove any vegetation that presents a fire hazard. Other portions of the site are clear of vegetation since they are existing road or pad areas.

The Applicant has proposed that archeological and Native American monitors would be present during all ground disturbance activities. These monitors would be actively involved in the planning and implementation of ground disturbance activities. As shown in Figure 2-5, a 20-foot buffer near the south end of solar array 3 will be maintained near the known archaeological site.

Support Pile Installation

Solar array construction would start with the installation of the support structure piles, which would be installed by drilling holes and setting the metal piles in concrete. The holes would likely be drilled with a backhoe that is equipped with an augur attachment. Each support structure would have one pile, so a total of 388 pilings would need to be installed. Each piling would be installed to a depth of six feet. A three-inch gravel base would be installed below each pile. The piles would be set in a concrete pier with a diameter of approximately 18-inches using casings.

Previous studies at the Hellman Property site have estimated depth to groundwater to be between four and seven feet below ground surface (bgs) (Wood 2018). Therefore, it is possible that water could be encountered during the installation of the piles. If groundwater is encountered, the pilings and concrete piers can be set in wet conditions. It is not anticipated that any dewatering would be needed to set the piles. Excess soil from the boring of the pile holes would be spread out on the surrounding ground, in the areas where the solar tables would be located.

Once the support structures piles are in place, the support structures and remaining solar PV system can be installed.

Solar PV System, Equipment and Conduit Installation

Once the piles have been installed the next step would be attaching the support structures to the piles. Other work that would proceed in parallel would be the installation of the equipment pads, and the digging of the conduit trenches. The final activities in this phase would be installation of the conduits and backfilling of the trenches, installation of the solar tables, and installation of the electrical equipment (inverters, subpanels, transformer, etc.).

The conduit trenches approximately 2 feet wide and 18 to 24 inches deep would be excavated using a backhoe along the collection-line corridors, as shown in Figure 2-5. The electrical conduits would be installed in the trenches and then the trenches would be backfilled with native soils. The construction of the five equipment pads would involve the setting of forms and placement of rebar, and then the pouring of concrete.

The final stage of this construction phase would be the placement of the solar panels/tables onto the support structures, the installation of the inverters, subpanels, and transformer, followed by the installation of the electrical wires for the system.

Underground power cables would be installed from the transformer pad to the existing Hellman property main service panel, which connects to the Hellman facilities as well as an existing SCE 12-kV distribution line.

Testing and Commissioning

Inspection, testing, and commissioning of the PV solar facility would be performed prior to operation of the Project, to establish an as-built baseline for the system, to ensure safe operation of the solar facility, and to confirm that the system is performing as expected.

2.2.4 Construction Workforce, Schedule, and Equipment

Workforce and Work Hours

The construction workforce would consist of approximately 4 to 10 construction personnel depending upon the construction phase as shown in Table 2-5. Approximately 10 construction personnel would be on-site daily at the peak construction. Construction would occur between 7 am and 6 pm Monday through Friday.

Table 2-5 Construction Activities, Duration, Personnel, and Vehicle Trips

Activity	Duration (days)	# Construction Workers per Day	# Vendor Visits per Day	# Delivery Trucks per Day
Site Preparation	3	6	0	2
Support Pile Installation	21	8	1	4
Solar PV System, Equipment, and Conduit Installation	20	10	1	4
Testing and Commissioning	20	4	2	0

Source: Newport Power

Project Schedule

Construction is anticipated to occur over an approximate three to four month period once all necessary regulatory permits and approvals have been obtained. Testing and commissioning would occur for approximately four weeks from the end of active construction. The anticipated duration of each construction activity is provided in Table 2-5.

Equipment

Table 2-6 provides a list of the estimated onsite equipment that would be needed for each phase of construction. Table 2-5 proves an estimate of the number of trucks that would be needed for delivering equipment and supplies to the project site during construction.

Construction Waste

Nonhazardous waste generated during construction (e.g., equipment packaging and trash generated by workers) would be temporarily stored in on-site dumpsters and disposed of off-site at an appropriate disposal facility. Any removed vegetation would be chipped on-site and spread on watershed property or composted. Typical construction-related hazardous substances such as lubricants, adhesives, and solvents would be disposed of off-site at an appropriate disposal facility.

Table 2-6 List of Offroad Construction Equipment by Phase

Phase/Equipment	Quantity	Hours/Day	Hp	Load Factor
Site Preparation				
Rubber Tire Dozer	1	8	84	0.37
Grader	1	8	148	0.41
Backhoe/Loader	1	8	84	0.37
Water Truck	1	4	376	0.38
Support Pile Installation				
Backhoe/Loader	1	7	84	0.37
Forklift	1	8	82	0.20
Generator	1	8	14	0.74
Water Truck	1	2	376	0.38
Solar PV System, Equipment, and Conduit Installation				
Forklift	1	8	82	0.20
Backhoe/Loader	1	7	84	0.37
Generator	1	8	14	0.74
Welding	1	8	46	0.45
Water Truck	1	2	376	0.38

Source: Estimates based upon input from Newport Solar and other similar solar array installation projects. Hp and load factors from CalEEMod default values, Online version 2022.1.1.17.

2.3 Project Operations

The solar facility operations would be monitored as part of the Hellman facility operations by the existing facility staff. The solar facility maintenance would be dispatched on an as-needed basis in response to equipment malfunction or decreased facility performance. It is estimated that five visits per year would be needed for general maintenance. Workers would visit the site in response to maintenance requests. Operation and maintenance of the facility would not create any new permanent employment positions.

Manual washing of the solar panels would require approximately 1,500 gallons of water and would take approximately 2 days to complete. No chemicals would be used for panel washing. Water would be applied to the solar panels at a rate that would not result in runoff from the site. Wash water would be absorbed into the soil and vegetation underneath the panels. Panel washing will occur, as needed, typically once per year. Vegetation would be allowed to regrow under the panels. Vegetation that shades or interferes with the solar panel function or that poses a fire risk would be trimmed or removed, as needed. Vegetation management would be limited to mechanical removal, which would occur approximately twice per year.

2.4 Proposed Solar Facility Lifetime

Solar panels typically have a functional lifetime of 25 to 30 years. Inverters typically operate without downtime-causing failure for extended periods of time – from 10 years to more than 25 years – when prescribed preventative maintenance is adhered to (DNV 2019). The manufacturer of the inverters for the proposed project offers extended warranties for up to 20 years (CPS 2021). At the end of their functional life, the inverters/panels could be replaced, or the system could be decommissioned and removed. The decision to replace the equipment or decommission the facility would likely be based upon several factors such as the remaining life of the oil field operations, the price of electrical power, the cost to replace the solar panels, etc.

3.0 Environmental Analysis

3.1 Environmental Checklist Form

Project Title	Hellman Solar PV Electrical System Project
Lead Agency Name and Address	City of Seal Beach 211 Eighth Street Seal Beach, CA 90740
Contact Person and Phone Number	Shaun Temple Planning Manager City of Seal Beach 211 Eighth Street Seal Beach, CA 90740 (562) 431-2527, Ext. 1316
Project Location	1 Pacific Coast Highway, Seal Beach, CA 90740 (just east of First Street)
Project Sponsor's Name and Address:	Hellman Properties, LLC P.O. Box 2398, Seal Beach, CA 90740
General Plan Designation:	Hellman Ranch Specific Plan
Zoning:	Oil Extraction/Hellman Ranch Specific Plan
Description of Project:	The proposed Project would consist of the installation and operation of a 1.5 megawatt (MW) fixed-tilt ground mounted solar photovoltaic (PV) system. This system would interconnect with the Hellman Property's electrical infrastructure and operate in parallel with the utility grid to provide sustainable clean energy in support of the facilities operations. The proposed Project would include three separate solar arrays, consisting of a total of 56 solar tables, which would be comprised of 3,100 solar panels. The proposed PV system would cover approximately 2.66 acres on the north edge of the existing Hellman Ranch Oil and Gas Production Facility (OGPF).
Surrounding Land Uses	The property to the south of the proposed Project property is owned by the Los Cerritos Wetland Authority. This property is about 100 acres in size and is zoned open space-natural (OS-N). The property to the north of the proposed Project property is owned by the County of Orange and serves as a retention basin. This property is about 43 acres in size and is zoned open space-natural (OS-N). To the west of the proposed Project property is the Department of Water and Power Haynes Cooling Channel. On the far west side of the channel is property owned by the Los Cerritos Wetland Authority, which is about 71 acres in size coving both sides of the San Gabriel River. This property is located within the City of Long Beach. To the east of the proposed Project property site is a small open space area that contains the Hellman Ranch Trail. This area is zoned open-space natural (OS-N). The site primarily contains ruderal upland vegetation. Just to the east of this open space is residential housing comprised of all single-family homes. This area is zoned Residential Low Density-9 (RLD-9).
Other Public Agencies Whose Approval is Required:	California Coastal Commission Santa Ana Regional Water Quality Control Board

3.2 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklist on the following pages.

☒Aesthetics	☐ Agriculture / Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials
☒ Hydrology/Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☐ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☒ Utilities/Service Systems	☐ Wildfire	☒ Mandatory Findings of Significance

3.3 Environmental Determination

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature S. Shum Temple Date 7/17/25

3.4 Evaluation of Environmental Impacts and Initial Study Checklist

In developing the evaluation of the environmental impacts, the CEQA Environmental Checklist (also known as an "Initial Study") was used. Each environmental issue listed on the checklist was marked "Potentially Significant Impact," "Less Than Significant Impact with Mitigation Incorporated," "Less Than Significant Impact," or "No Impact" depending on the potential of the Project to have adverse impacts. For each checklist item an explanation/analysis is provided to support the level of impact determination. In developing the initial study checklist, the following guidelines from Appendix G of the CEQA Guidelines were used.

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors, as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on- site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level.

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a. Earlier Analyses Used. Identify and state where they are available for review.

    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
    a. the significance criteria or threshold, if any, used to evaluate each question; and
    b. the mitigation measure identified, if any, to reduce the impact to less than significance

Each of the issue areas specified in the CEQA Environment Checklist is discussed below.

3.4.1 Aesthetics

Except as provided in Public Resources Code Section 21099, would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

The City of Seal Beach is a community located on the Pacific Ocean in northwest Orange County. The proposed Project would be located within the existing Hellman Ranch OGPF site. Pacific Coast Highway is the nearest state highway to the Project site, which is approximately 0.7 miles away. Due to the low high height of the panels (4.5 feet) and the surrounding area vegetation, the panels would not be visible from Pacific Coast Highway. Gum Grove Park is the nearest public park and borders the eastern edge of the Hellman Ranch OGPF property. Between Grove Gum Park and the Hellman OGPF is a wetland area that is owned by the Los Cerritos Wetland Authority, who are proposing a wetland restoration project for this area. The proposed solar facility would be visible from Gum Grove Park and the Los Cerritos Wetland property. The topography of Hellman Ranch OGPF site is primarily flat terrain.

a. Have a substantial adverse effect on a scenic vista? (Less Than Significant Impact)

The views from Gum Grove Park to the north look across the Hellman Ranch OGPF and in the distance are several large electrical generating stations. All the views are dominated by industrial type facilities. Figure 3-1 shows the current views from Gum Grove Park to the North. The brush area in the foreground of

picture in Figure 3-1 is the Los Cerritos Wetland Authority property. The oil tanks and oil well in the middle of the picture are part of the Hellman OGPF.

Figure 3-1 Current View from Gum Grove Park Looking North



Viewpoint from Gum Grove Park at 50mm focal length as a simulation of the eye view.

The proposed solar facility would be located beyond the oil tanks and behind and to the right of the oil well and would be about 0.16 miles from the closest point in Grove Gum Park. The front edge of the solar tables would be at a height of approximately 18-inches, with the back edge of the tables being at a height of about 50 inches. Given the low profile of the solar tables, portions of the facility would be blocked from view by existing vegetation and equipment at the Hellman OGPF facility.

Figure 3-2 provides a visual simulation of the proposed solar project as viewed from the closest point in Grove Gum Park. The proposed solar project would not significantly alter the views from Grove Gum Park or the Los Cerritos Wetland, which are dominated by existing large scale industrial facilities. The solar facility panels would not block views of any scenic vistas. The impact on scenic vistas would be less than significant.

b. Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? (No Impact)

See response to Item 1(a) above. The California Department of Transportation (Caltrans) California Scenic Highway Mapping System, there are no other Scenic Highways in Long Beach or Seal Beach. The closest eligible state scenic highway is Pacific Coast Highway (Highway 1), which is located approximately 0.7 miles to the west of the project site, however, this is not a designated state scenic highway. The Project would not impact any scenic resources such as trees, rock outcroppings, or historic buildings within a state

scenic highway. No trees, rock outcroppings, or any structures would be removed from the property because of the Project. The proposed Project would not alter any views in the area and would be visible from Pacific Coast Highway. Therefore, the project would have no impact on scenic resources.

Figure 3-2 View from Gum Grove Park with Simulation of Solar Facility



Viewpoint from Gum Grove Park at 50mm focal length as a simulation of the eye view.

c. In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? (No Impact)

The project site is in an urbanized area and would not conflict with applicable zoning and plan regulations as it relates to scenic quality. The City of Seal Beach General Plan zoning for the solar facility site is industrial-oil extraction. The proposed solar facility would not impede the enhancement, implementation, preservation of the existing saltwater marsh, freshwater wetlands, and Gum Grove Park. Therefore, the proposed solar facility would not conflict with the City of Seal Beach general plan regulations as it relates to scenic quality. As such there would be No Impact.

d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? (Less Than Significant Impact)

Existing sources of nighttime lighting in the surrounding area include lights associated with the Hellman OGPF, the industrial facilities to the north of the site, and the commercial building to the northeast.

Construction

Construction of the Project would primarily occur Monday through Friday from 7:00 am to 6:00 pm, and construction would last approximately 3 to 4 months. Lighting of construction work areas may be used during the morning or evening hours of construction for safety and security of personnel, particularly during the winter months when natural light is limited. Construction lighting would be temporary and all lights would be shielded and directed only toward the construction area so as not to impact surrounding areas. Project construction would not involve equipment or materials that would introduce a substantial source of glare. The impact from lighting and glare during construction would be less than significant.

Operation

There would be no permanent lighting installed as part of the proposed solar project. As such, there would be no lighting impacts associated with the operations of the PV solar facility.

Solar panels are designed to be highly absorptive of light that strikes the panel surfaces, generating electricity rather than reflecting light. Solar panels have a lower index of refraction/reflectivity than common sources of glare in residential environments. Solar PV panels are constructed of dark-colored (usually blue or black) materials and are covered with anti-reflective coatings. Modern PV panels reflect as little as two percent of incoming sunlight, about the same as water and less than soil or even wood shingles (Meister 2014).

The glare and reflectance levels of modules are further reduced with the application of antireflective coatings. PV suppliers typically use stippled glass for panels as the “texturing” of the glass to allow more light energy to be channeled/transmitted through the glass while weakening the reflected light. With application of anti-reflective coatings and the use of modern glass technology, Project solar panels would display overall low reflectivity.

Although panel would have low reflectivity, some low level of reflectivity would still exist. To address potential glare impacts associated with photovoltaic (PV) solar arrays, Sandia National Laboratories (Sandia) developed the Solar Glare Hazard Analysis Tool (SGHAT), a modeling/compliance analysis tool. This tool was originally developed for use in evaluating glare in the vicinity of airports. SGHAT is a web-based tool and methodology to evaluate potential glare associated with solar energy installations. The validated tool provides a quantified assessment of (1) when and where glare will occur throughout the year for a prescribed solar installation, (2) potential effects on the human eye at locations where glare occurs, and (3) the annual energy production from the array so that alternative designs can be compared to maximize energy production while mitigating the impacts of glare. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g., anti-reflective coating, texturing), and models developed over several years at Sandia. The model allows for the inclusion of obstructions such as trees, bushes, buildings, etc.

The SGHAT tool categorizes glare into three levels of severity which are defined by three colors.

- Red glare: glare predicted with a potential for permanent eye damage (retinal burn)
- Yellow glare: glare predicted with a potential for temporary after-image
- Green glare: glare predicted with a low potential for temporary after-image

As a point of comparison, direct viewing of the sun without a filter is on the border between yellow glare and red glare, while typical camera flashes are considered to be lower tier yellow glare (approximately three orders of magnitude less than direct viewing of the sun).

For the purposes of this analysis, any glare that would impact residential properties was considered significant. On open space areas, glare that was greater than green was considered significant.

The SGHAT tool, which is licensed for use in ForgeSolar for commercial use, was used to assess the glare impacts of the proposed Solar PV Project on nearby residential properties and open space areas in the vicinity of the project site. The model works by setting up the solar array(s) and their orientation as well as designating the location of residential or other receptors/observation points. Figure 3-3 shows the location of 34 observation points that were evaluated for glare impacts, and included the following:

- The 18 residential homes that back up to the project area on Blue Herron (OP1-OP18);
- Three residential homes that back up to the area along Crestview Avenue (OP32-OP34);
- Three locations along the Hellman Ranch Trail (OP26, OP27, and OP31);
- Two locations on the western side of the Hellman Property (OP19 and OP20);
- Three locations in the South LCWA Site (OP28-OP30);
- Two locations in Zedler Marsh Site (OP24 and OP25); and
- Three locations in the Central LCWA Site (OP21-OP23).

Figure 3-3 Location of Glare Analysis Observation Points



Source: Google, Google Earth data © Google 2023.

In evaluating impacts on the residential properties, observation points were set in backyards, with an observation height of 6 feet above ground level. For open space areas that are accessible via trail, the observation height was set at 6 feet above ground level. All other open space observation heights were set at ground level.

The solar arrays would be tilted facing south at about a 10 degree angle. The greatest potential glare from the solar facility would occur during the sunrise/sunset periods when the sun is low on the horizon. Unabsorbed incoming light would reflect off the panels which could create glare effects.

Table 3-1 provides a summary of the glare analysis results. Appendix D provides the detailed results of the glare analysis.

Table 3-1 Summary of Analysis of Predicted Glare

Observation Point Numbers	Description	Green Glare (hrs/year)	Comments
OP1-OP8	Residential Properties at North End of Blue Heron	0	No Glare with Existing Vegetation Screening
OP9-OP18	Remaining Residential Properties on Blue Heron	0	No Glare with or without Existing Vegetation Screening
OP-19	Western Side of the Hellman Property	0	No Glare with or without Existing Vegetation Screening
OP20	Western Side of the Hellman Property	19.8	During Sunrise during March/April and August/September. Peak day glare is about 15 mins per day. Glare is associated with the western most solar array.
OP21-OP23	Central LCWA Site	0	No Glare with or without Existing Vegetation Screening
OP24-OP25	Zedler Marsh Site	0	No Glare with or without Existing Vegetation Screening
OP26	Hellman Ranch Trail	0	No Glare with Existing Vegetation Screening
OP27	Hellman Ranch Trail	0	No Glare with or without Existing Vegetation Screening
OP28	South LCWA Site	0	No Glare with or without Existing Vegetation Screening
OP29	South LCWA Site	26.6	During Sunrise from April through August. Peak day glare is about 15 mins per day. Glare is associated with the eastern most solar array.
OP30	South LCWA Site	0	No Glare with or without Existing Vegetation Screening
OP31	Hellman Ranch Trail		No Glare with or without Existing Vegetation Screening
OP32-OP34	Residential Properties Crestview Avenue	0	No Glare with or without Existing Vegetation Screening

None of the observation point generated yellow or red glare.
See Appendix D for detailed glare analysis results.
Analysis assumed no cloud cover or fog occurs on any day.

None of the residential properties were predicted to have any glare impacts. Two of the open space sites were projected to have “green” glare impacts during the sunrise period for up to about 15 minutes per day for a few months of the year. No glare impacts were found to occur during the sunset hours.

The glare analysis assumes there is no fog or cloud cover during any of the hours. Cloud cover and fog would reduce/eliminate the glare. While no significant glare effects were identified, the implementation of mitigation measure AES-2 would serve to minimize the potential for glare.

Avoidance, Minimization and/or Mitigation Measures

Mitigation Measure AES-1: Construction Lighting – Any construction lighting shall be shielded and directed only toward the construction area so as not to impact surrounding areas.

Mitigation Measure AES-2: Solar Panel Design– The solar panels shall be installed facing south with a fixed tilt angle of 10 degrees. The solar panels shall be constructed of dark-colored materials and shall be covered with an anti-reflective coating. These requirements shall be documented on the final project drawing submitted to the City for approval.

3.4.2 Agriculture and Forestry Resources

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non- agricultural use?	☐	☐	☐	☒
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? (No Impact)

The proposed Project does not involve conversion of any farmland. The proposed Project does not call for rezoning of farmland, nor is it currently zoned for agriculture. Therefore, there would be no impact on agriculture and forest resources.

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract? (No Impact)

See response to Item 2(a) above. The Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract. The property is not under a Williamson Act contract. Therefore, the solar project would not conflict with existing zoning for agricultural use or a Williamson Act contract.

c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))? (No Impact)

The Project does not involve land that is considered forest land or timberland zoned for timberland production. It is a solar PV project that would occur within an existing oil and gas production site, which is zoned for industrial-oil extraction. Therefore, the project would not conflict with existing zoning for forest or timber land.

d. Result in the loss of forest land or conversion of forest land to non-forest use? (No Impact)

The proposed Project site would be in an existing oil and gas production facility and does not involve conversion of forest land to nonforest use. Therefore, no impact on this topical area would occur.

e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? (No Impact)

The proposed Project will not have any impact on farmland or agricultural uses. The Project site is within an existing industrial area. Therefore, the Project will not have any impact that could result in the conversion of property to non-agricultural use.

3.4.3 Air Quality

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

a. Conflict with or obstruct implementation of the applicable air quality plan? (Less Than Significant Impact)

The Project site is in the South Coast Air Basin (SCAB). The Federal Clean Air Act (1977 Amendments) required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards. The SCAB could not meet the deadlines for ozone, nitrogen dioxide, carbon monoxide, or PM_{10}. In the SCAB, the agencies designated by the governor to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it several times, because earlier attainment forecasts were shown to be overly optimistic.

The 1990 Clean Air Act Amendment (CAAA) required that all states with airsheds with “serious” or worse ozone problems submit a revision to the State Implementation Plan (SIP). Amendments to the SIP have been proposed, revised, and approved over the past decade.

On December 2, 2022, the South Coast Air Quality Management District (SCAQMD) adopted the 2022 Air Quality Management Plan (AQMP), which provides the blueprint for how the Basin will meet the 2015 8-Hour Ozone Standard by 2037. While the 2022 AQMP fulfilled Clean Air Act requirements for "extreme" nonattainment areas, it did not formally address contingency measure requirements as U.S. EPA was in the process of developing updated contingency measure guidance. The 2022 AQMP committed to address these requirements once new guidance was issued. On December 3, 2024, the U.S. EPA released updated guidance for contingency measures. The South Coast Air Basin Contingency Measure SIP Revision for the 2015 8-Hour Ozone Standard has been developed in response to U.S. EPA's new guidance to satisfy contingency measure requirements in the Basin (SCAQMD 2025).

The current attainment deadlines for all federal non-attainment pollutants are provided in Table 3-2.

Table 3-2 Attainment Deadlines for Federal Non-Attainment Pollutants

Standard	Concentration	Classification	Latest Attainment Year
2008 8-hour Ozone	75 ppb	Extreme	2031
2015 8-hour Ozone	70 ppb	Extreme	2037
1997 8-hour Ozone	80 ppb	Extreme	2023
1997 1-hour Ozone	120 ppb	Extreme	2022
2012 Annual $PM_{2.5}$	12 µg/m3	Serious	2030
2006 24-hour $PM_{2.5}$	35 µg/m3	Serious	2023

Source: SCAQMD Final 2022 AQMP, December 2022; South Coast Air Basin Contingency Measure SIP Revisions for the 2015 8-Hour Ozone Standard, May 20, 2025; South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard, June 7, 2024.

The proposed Project relates to the AQMP in that the project would generate clean electrical power, which would provide additional emission reductions associated with current power generation. Both the construction and operational emissions would be below the SCQAMD air quality thresholds. As such, the Project will not conflict with or obstruct implementation of the South Coast Air Basin’s AQMP. Therefore, the impacts to implementation of applicable air quality plans would be less than significant.

b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? (Less Than Significant Impact with Mitigation Incorporated)

The SCAQMD has established CEQA threshold to assess the impacts of a project on air quality within the South Coast Air Basin (SCAB). These SCAQMD thresholds have been used to assess the significance of the air quality impacts associated with the proposed Project.

Construction Activity Impacts

CalEEMod was used to estimate the construction emission for the proposed Project. The CalEEMod output files are provided in Appendix E. Table 3-3 provides a summary of the peak day criteria pollutant construction emissions for each phase of the project. None of the construction emissions would exceed the SCAQMD CEQA construction thresholds, or the localized thresholds. Therefore, construction impact to criteria pollutant air quality would be less than significant.

Table 3-3 Peak Day Construction Emissions by Phase

Construction Phase	Peak Day Emissions, lbs/day					
	VOC	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Site Preparation	1.02	7.49	8.98	0.03	9.19	3.99
Support Pile Installation	0.45	3.93	5.26	0.03	3.48	0.51
Solar PV System, Equipment, and Conduit Installation	0.63	5.24	6.97	0.03	3.56	0.56
Testing and Commissioning	0.04	0.25	0.49	0.01	0.18	0.05
Max Peak Day	***1.02***	***7.49***	***8.98***	***0.03***	***9.19***	***3.99***
SCAQMD CEQA Thresholds	75	100	550	150	150	55
Exceed Threshold?	No	No	No	No	No	No
Localized Thresholds (lbs/day)[1]		197	1,711		14	9
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.

Operational Impacts

The sources of operational emissions would be associated with the eight trips per year that would be needed to service the solar facility. Five of these trips would be for general maintenance, two would be for vegetation mowing, and one would be for panel washing. Operation of the solar panels would not generate any air emissions. Table 3-4 provides peak day operational emissions. None of the operational emissions would exceed the SCAQMD CEQA operational thresholds, or the localized thresholds. Operation of the solar facility would not generate any air toxic emissions. Therefore, operational impact to criteria pollutant air quality would be less than significant.

c. Expose sensitive receptors to substantial pollutant concentrations? (Less Than Significant Impact)

See response to Item (b) above and recommended mitigation (see below) in compliance with the SCAQMD for short-term construction related impacts. Based upon the analysis presented for Item 3(b) above, the proposed Project's impacts on sensitive receptor would be less than significant.

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.

a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5? (Less Than Significant Impact)

A records search conducted at the South Central Coastal Information Center (SCCIC) at California State University at Fullerton failed to indicate the presence of any listed National Register of Historic Places or properties within a quarter-mile radius of the proposed Project area. Additionally, no California Historical Landmarks or California Points of Historical Interest properties were identified on the site or vicinity. The California State Historic Resource Inventory (HRI) lists no buildings in the vicinity that have been previously evaluated for historical significance. However, as discussed in section item (b) below, archaeological sites eligible for the California Register of Historical Resources (CRHR) may be present on the Hellman Ranch OGPF property. Sites eligible for the CRHR are considered historical resources under CEQA. As discussed in Response 5(b) below, implementation of Mitigation Measure CR-1 would reduce the potential impact below the level of significance.

b. Cause a substantial adverse change in the significance of an archeological resource pursuant to Section 15064.5? (Less Than Significant Impact with Mitigation Incorporated)

Many archeological investigations have been conducted on the Hellman property over the past 50 years in support of both oil/gas and residential development. The most recent archeological field investigation was done in 2019 in support of a proposed gas plant approximately 320 feet southwest of the current project area (Wahoff 2019). As part of the 2019 study, a records search was conducted at the South Central Coastal Information Center (SCCIC) at California State University at Fullerton. The results of this records search, including previous surface and subsurface investigations and known cultural resources, are discussed below.

Previous Surveys

The 2019 records search revealed that at least 18 previous cultural resources surveys or other archaeological investigations have been conducted within 0.25 mile of the current Project area, and that the entire Project area has been intensively surveyed for archaeological resources on at least four occasions (Archaeological Associates 1980; Rosenthal and Padon 1990; Stickel 1996; York and Willey 2004). None of these field surveys revealed any cultural resources within the Project area, although one (Archaeological Associates 1980) noted two dispersed scatters of marine shell (CA-ORA-850 and -851) located approximately 500 and 50 feet east and northeast of the Project area, respectively. Other cultural resources within 0.25 mile include CA-ORA-257, -258, and -259, all consisting of remnants of prehistoric shell middens along the crest of Landing Hill to the south of the Project area (Redwine 1958; Stickel 1996; Cleland et al. 2007); P-30-01544, a large but dispersed scatter of marine shell and artifacts located on the Boeing property immediately north of Adolfo Lopez Drive (Underwood 2000); and the Los Alamitos Pump Station, approximately 550 feet north of the Project area (Shepard 2002).

Previous Subsurface Investigations

Although several extensive archaeological excavations have been conducted along the crest of Landing Hill just to the south and east of the Project area (Cleland et al. 2007; Desautels 1981; Redwine 1958; Stickel 1996), subsurface investigation in the lower elevations within the Hellman Ranch OGPF have been limited to an unreported testing program at CA-ORA-851 by LSA Associates in 1990, and an exploratory archaeological trenching program by EDAW, Inc. in 2006.

LSA Testing at CA-ORA-851: In 1990, LSA Associates initiated an extensive subsurface testing program for a planned residential development on a portion of Landing Hill just to the east of the Project area. This testing program included several large prehistoric sites along the crest of the hill (CA-ORA-260, -261, -262, and -263), as well as site CA-ORA-851, which is located approximately 50 feet to the east of the present

Project area. Although the LSA testing program was never fully reported, York (2006) reported that field forms provided to EDAW, Inc. by LSA indicated that two 1-by-1 meter (m) test units were excavated at CA-ORA-851, both yielding only small amounts of marine shell. The shells were limited to the upper 20 centimeters (cm) of the deposit, in a highly disturbed context that also included imported fill and construction debris. Below this disturbed layer, according to the LSA field notes, were natural sediments containing no shells.

Exploratory Trenching by EDAW, Inc. (York 2006): In 2006, EDAW, Inc. conducted a program of exploratory archaeological trenching at various locations throughout the Hellman Ranch OGPF in support of a proposed underground tank farm replacement project (York 2006). A total of 31 trenches were excavated, including 20 along proposed pipeline alignments and 11 within the footprint of the proposed tank farm. Each trench measured approximately 10 m long and between 120 and 200 centimeters deep. Of the 31 trenches, 4 were placed within or immediately adjacent to the present Project area: trenches 1, 2, and 20 in the far southeastern portion, and Trench 6 in the northwestern portion.

Trench 1, placed at the northern boundary of CA-ORA-851, appears to confirm the field notes for the LSA excavations: the upper 40 cm is clearly disturbed and contains sand, gravel, sparse marine shell, and recent debris. Underlying this were apparently undisturbed alluvial or estuarine fine sand, silt, and clay sediments that contained no shell. On this basis, York (2006) concluded that CA-ORA-851 likely represents an artificial fill deposit composed in part from sediment dredged from nearby Alamitos Bay.

Cultural Resources within Project Area

A Cultural Resources Assessment was conducted for the proposed Project site (York 2023). This assessment was conducted in accordance with Section 15064.5(a)(2)-(3) of the CEQA, and the guidelines for preparation of archaeological reports by the Office of Historic Preservation. A copy of the cultural resources assessment is provided in Appendix G.

This assessment indicated that none of the several previous surveys that have included the Project area have revealed cultural resources. Moreover, of the seven cultural resources that have been previously recorded within 0.25 miles of the Project area, only one, CA-ORA-851, is closer than approximately 500 feet to areas subject to direct disturbance from the proposed solar array construction. This resource, a dispersed scatter of marine shell fragments, was subject to subsurface archaeological examinations in 1996 and 2006, both of which indicated that the deposit most likely represents recently imported fill materials. It would not be affected by the proposed solar array construction. Additionally, the rest of the 2006 exploratory trenching program designed to identify buried archaeological resources at various locations within the Hellman Ranch OGPF was entirely negative, including at several locations within the present Project area (York 2006).

These results indicate that the archaeological sensitivity of the Project area is generally low, at least in near-surface contexts, and that it is generally unlikely that cultural resources would be encountered during ground disturbance associated with the Project. However, as noted in previous studies, there is still some possibility that intact cultural resources could exist within the Project under recent alluvium or artificial fill (York 2023). Given this possibility, mitigation measures have been provided. Therefore, impact to cultural/archaeological resources would be less than significant with mitigation incorporated.

c. Disturb any human remains, including those interred outside of dedicated cemeteries? (Less Than Significant Impact)

There are no known human remains within the proposed Project site. As discussed above, the proposed Project site has been previously disturbed and is located within a lowland area of the Hellman Ranch OGPF

site, a context generally considered unsuitable for human burial. Therefore, it is unlikely that the proposed Project would disturb any human remains. Implementation of mitigation measure CR-1 would address the procedures to be followed in the unlikely event that human remains are discovered during the earth moving activities.

Avoidance, Minimization and/or Mitigation Measures

Mitigation Measure CR-1: Archeological Monitoring and Unanticipated Discovery Treatment Plan – Prior to issuance of a grading permit an Archeological Monitoring and Unanticipated Discovery Treatment Plan shall be submitted to the City Community Development Department for review and approval. The plan shall be prepared by a City approved archaeologist. The qualified archeologist shall coordinate with the Native American monitors during the preparation of the plan. The plan shall outline areas that will be designated Environmentally Sensitive Areas, if needed. Significant or unevaluated archaeological resources that are being avoided and are within 50 feet of the construction zone shall be designated as Environmentally Sensitive Areas. The resources shall be delineated with exclusion markers to ensure avoidance.

The plans shall specify the monitoring procedures, the field and laboratory methods that would be used for treatment of unanticipated discoveries, and the requirements for Native American participation in the monitoring and treatment activities. Procedures outlined shall include stop-work and protective measures, notification protocols, procedures for significance assessments, and appropriate treatment measures. The plan shall state avoidance or preservation in place is the preferred manner of mitigating impacts to historical resources, unique archaeological resources, and contributors to the significance of the tribal cultural landscape but shall provide procedures to follow should avoidance be infeasible in light of factors such as the nature of the find, project design, costs, and other considerations.

The plan shall outline the protocols and procedures to be followed if human remains and associated funerary objects or grave goods are uncovered.

Mitigation Measure CR-2: Archaeological Monitoring – An archaeologist, approved by the City of Seal Beach, shall be present at the site during all ground disturbance activities.

3.4.6 Energy

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

The proposed solar PV project would use energy for both construction and operations. The main energy use for construction would be diesel fuel for construction equipment. The energy used for operation would be fuel for workers commuting to the site and for operation of a lawn mower. The 1.5 MW Solar PV Electrical System, which would interconnect with the Hellman Property's electrical infrastructure and operate in parallel with the utility grid to provide sustainable clean electrical energy in support of the

various Hellman Property facilities operations. Any excess power generated would be sold back to the SCE grid.

For all of California, the utility-scale solar (PV) capacity factor is about 28% (USEIA. 2019). For a facility in Seal Beach, it would be expected that the solar (PV) capacity factor would be lower due to the proximity to the coast and the influence of fog. The Applicant has estimated an annual solar capacity factor of 20% which means the project would generate about 2,630 MW-hrs of electricity per year.

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? (Less than Significant Impact)

Construction

All the offroad construction equipment would use diesel fuel. The on road vehicles would use a combination of diesel fuel and gasoline. Table 3-6 provides a breakdown of the total estimated fuel use for construction.

Implementation of mitigation measure AQ-1 that requires maintaining equipment engines in proper tune, use of Tier 4 engines, and enforcing a 5-minute idling limits would serve to reduce energy use from construction.

Table 3-6 Estimated Construction Equipment Fuel Use (gals)

Equipment Group	Diesel	Gasoline	Total
Onsite Construction Equipment	3,277	0	3,277
On Road Construction Vehicles	1,046	679	1,725
Total	4,323	679	5,002

See Appendix C for fuel use calculations.

Operation

The solar array would require minimal maintenance, including panel washing, vegetation removal, and periodic maintenance work. It is estimated that about eight trips per year would be needed for operational activities, with an estimated fuel use of about 27 gallons of gasoline per year. The facility would be monitored by existing personnel at the Hellman Ranch Facility.

The solar PV facility would generate about 2,630 MW-hrs of electricity per year. Operational activities would not require excessive or wasteful use of energy that could lead to potentially significant environmental impacts. Consumption of energy during operation would be far less than the amount of renewable energy generated by the solar facility. The operational impact would be less than significant because energy use during operation would be minimal.

Given all these facts, the proposed Project's impacts on consumption of energy resources would be less than significant.

b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? (No Impact)

Renewables Portfolio Standard (RPS) Program – California's RPS program was established in 2002 by Senate Bill (SB) 1078 with the initial requirement that 20% of electricity retail sales must be served by renewable resources by 2017. The program was accelerated in 2015 with SB 350 which mandated a 50% RPS by 2030. SB 350 includes interim annual RPS targets with three-year compliance periods and requires 65% of RPS procurement to be derived from long-term contracts of 10 or more years. In 2018, SB 100 was signed into law, which again increases the RPS to 60% by 2030 and requires all the state's electricity to

come from carbon-free resources by 2045. The Project would comply with the State's goal of increasing the use of renewable energy. Therefore, no impact would occur.

California Energy Efficiency Strategic Plan – On Sept. 18, 2008, the CPUC adopted California's first Long Term Energy Efficiency Strategic Plan, presenting a single roadmap to achieve maximum energy savings across all major groups and sectors in California. The Strategic Plan was subsequently updated in January 2011. The proposed solar PV project would be consistent with the goals established for industrial sector. Therefore, no impact would occur.

City of Seal Beach General Plan – The City of Seal Beach's General Plan includes energy conservation opportunities and techniques, aimed at reducing building energy use (City of Seal Beach, 2003). The project would install no buildings and therefore, energy conservation items in the General Plan would not apply to the Solar PV project.

3.4.7 Geology/Soils

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☒	☐
	i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				
	ii) Strong seismic ground shaking?	☐	☐	☒	☐
	iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
	iv) Landslides?	☐	☐	☐	☒
b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

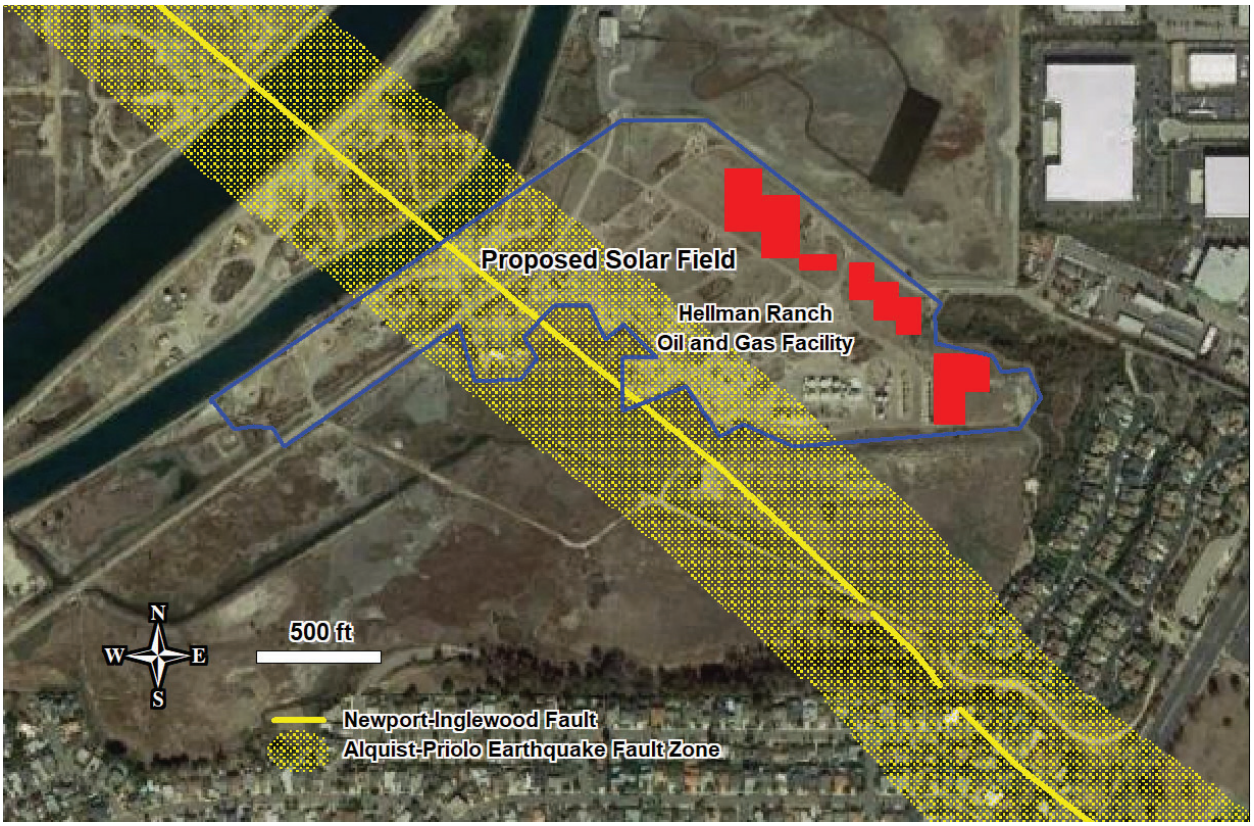
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42; (ii) Strong seismic ground shaking? (Less than Significant Impact)

All Southern California, including the proposed Project site, is subject to the effects of seismic activity. The project itself will not expose people or structures to potential adverse effects, including the risk of loss, injury or death involving the rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure including liquefaction or landslides. However, the proposed Project must adhere to the City's adopted Building Code regulations that pertain to mitigating the potential effects of fault ruptures and ground shaking, or failures caused by a seismic event.

The Alquist-Priolo and Newport-Inglewood Fault Zones cross the Hellman Ranch OGPF property just to the southwest of the proposed Solar PV facility. Figure 3-4 shows the fault zone and fault in relation to the proposed Project site. The Solar PV facility would be located outside of the Alquist-Priolo Fault Zone. The solar table support structures would be required to meet Seismic Zone 4 standards per the appropriate section of the California Building Code at the time of construction. However, in a severe earthquake it is possible that the solar tables could be damaged, but the damage would be limited to the project site.

Figure 3-4 Alquist-Priolo Fault Zone



California Department of Conservation Earthquake Zone Maps 2023.

The nearest habituated structure to the Project is 450 feet. The Project would not cause risk of loss, injury, or death associated with seismic-related hazards, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure, because no people or structures would be located adjacent to the solar PV facility. The Project does not involve construction of habitable structures that could cause adverse effects involving earthquakes and strong seismic ground shaking. Neither construction nor operation of the solar PV facility are anticipated to cause any substantial adverse impacts to fault rupture. Therefore, the impact would be less than significant.

(iii) seismic-related ground failure, including liquefaction? (Less than Significant Impact)

A reviewed the seismic hazard zone report by the Department of Conservation Division of Mines and Geology (DCDMG, 1998 – Los Alamitos Quadrangle) and Earthquake Zones of Required Investigation Los Alamitos Quadrangle map by California Geological Survey (CGS, 1999). Based on CGS (1999), the planned location for the expansion is within an area/zone identified by the State of California as being potentially susceptible to liquefaction induced ground deformation and within an area encompassing active faults that constitute a potential hazard to structures from surface faulting.

The entire Hellman Ranch OGPF site is in an area susceptible to liquefaction. This is primarily since the soil in the area is artificial fill (see item (c) below). The Solar PV Project would not result in the exposure of people or property to geologic hazards, such as earthquakes, landslides, mudslides, ground failure, or similar hazards. In the event of damage to the Solar table from liquefaction, the damage would be limited to the project area site, and would not cause risk of loss, injury, or death since not people or structures are adjacent to the solar PV facility. Therefore, the impact would be less than significant.

(iv) landslides? (No Impact)

Per the California Department of Conservation Landslide Inventory, there are no mapped landslides within the project site. The subject property does not have potential for landslides in case of seismic activity or other triggering mechanism, such as rainfall or runoff, due to the flat topography of the site. Therefore, no such impact will occur because of landslides.

b. Result in substantial soil erosion or the loss of topsoil? (Less than Significant Impact)

Construction of the Solar PV Project would not involve any cut and fill operations. No topsoil would be removed from the project site. Permanent removal of topsoil would be limited to the 388 footing for the solar table supports and five pads for the electrical equipment. These areas represent a total of 0.04 acres of the 4.57 acre site. The topsoil from these areas would be spread out within the project area. Temporary removal of topsoil would occur for the installation of the underground powerlines (0.29 acres). This topsoil would be placed back over the trenches as part of the backfilling operations. The Regional Water Quality Control Board will require that the project implement a Stormwater Pollution Prevention Plan with Best Management Practices during construction to control any soil loss. Once construction is complete the area will be allowed to revegetate. Therefore, impacts associated with loss of topsoil would be considered less than significant.

c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? (Less than Significant Impact)

Liquefaction is a phenomenon in which saturated granular soils transform from a solid to a liquefied state when subjected to large, rapid loadings such as strong ground shaking during an earthquake. The

transformation to a liquid state occurs due to the tendency of granular materials to compact, which consequently results in increased pore water pressure accompanied by a significant reduction in the effective stress. The change of state occurs most readily in recently deposited (i.e., geologically young) loose to moderately dense granular soils. The liquefaction susceptibility is highly dependent on the density of the soil, wherein looser soils are generally more susceptible. Area of artificial fill are more susceptible to liquefaction.

The Solar PV Project site is located on ground that is susceptible to liquefaction. Figure 3-5 shows a map of the surficial deposits within the project area, and the soil is mainly artificial fill.

Over the past 70 years that has been no surface displacement, or impacts to oil field facility equipment, or existing infrastructure (roads, river, and cooling channel levees). The solar table support structures would be required to meet seismic engineering standards to prevent damage or instability during a seismic event. Therefore, impacts would be less than significant.

d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? (Less than Significant Impact)

Expansive soils are characterized by the ability to undergo significant volume change (i.e., shrink and swell) as a result of variation in soil moisture content. Soil moisture content can change due to many factors, including perched groundwater, landscape irrigation, rainfall, and utility leakage. Expansive soils are commonly very fine-grained with a high to very high percentage of clay.

The project site consists primarily of Bolsa Silt Loam and Bolsa Silt Clay Loam, which has a low to moderate expansion potential (GLA 2023). The Solar PV Project would not involve the construction of any buildings and the project site is not acceptable to the public so the risk to life or property would be minimal, and impacts would be considered less than significant.

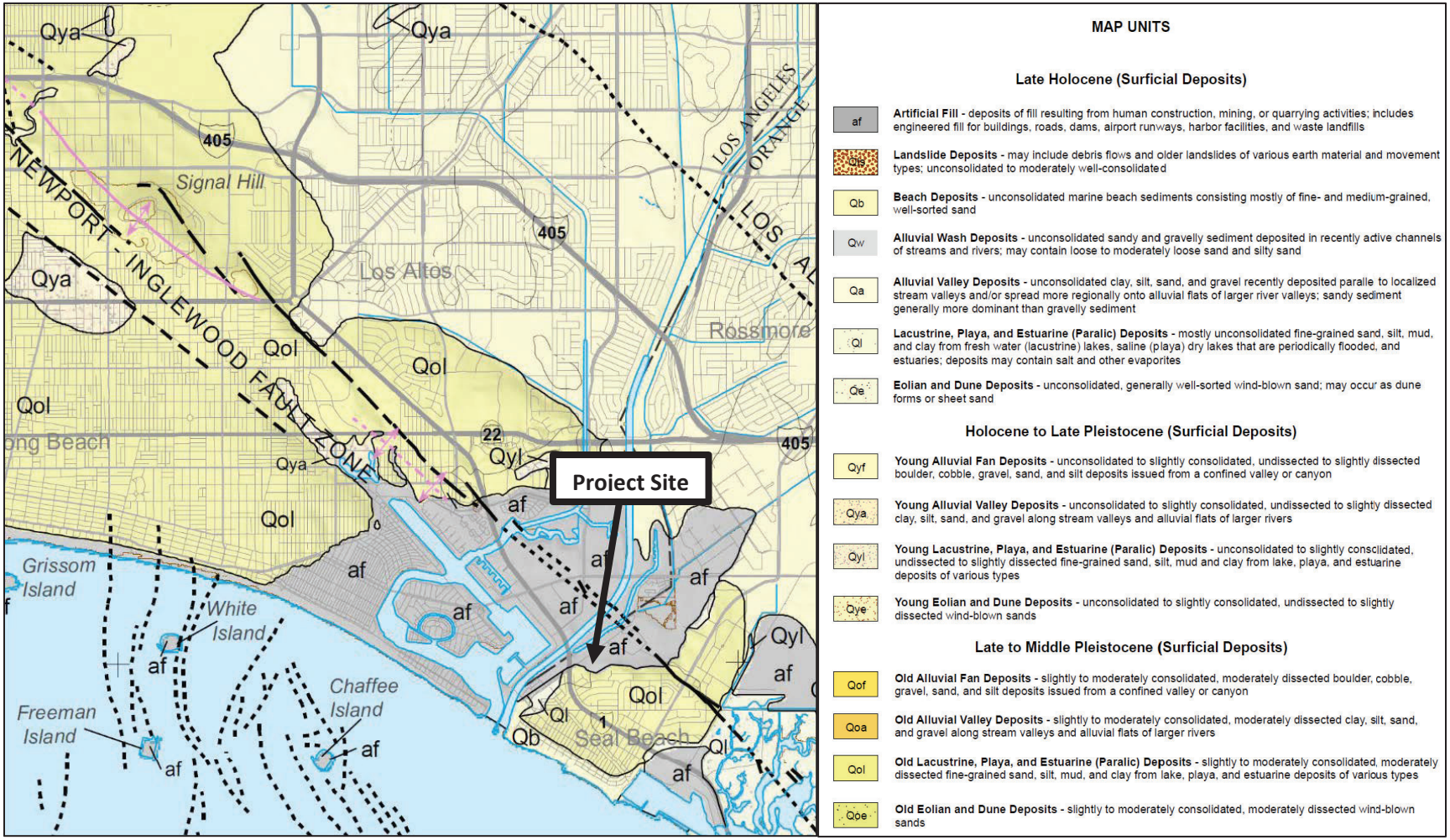
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? (No Impact)

Due to the nature of the proposed Project, no septic tanks or alternative wastewater disposal systems are required or proposed for the implementation as part of the proposed project.

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (Less Than Significant)

The project site is in an area of artificial fill (See Figure 3-5). It is likely that below the artificial fill are Estuarine deposits. Artificial fill areas have no paleontological potential. Estuarine deposits have low paleontological potential (ESA 2020). Based upon boring samples done for the gas plant the upper 7 to 10 feet of soil was found to be fine-grained typically classified as medium to high plasticity clays, which would be indicative of artificial fill material (Wood 2018).

Figure 3-5 Geologic Compilation of Quaternary Surficial Deposits in the Project Area



Source: Special Report 217: Geologic Compilation of Quaternary Surficial Deposits in Southern California (2012 Revision), California Department of Conservation.

The soil analysis done as part of the Los Cerritos Southern Wetland Restoration Project, which is in the same area as the proposed Project, assumed an artificial fill depth of 5 feet (LCWA 2023).

The concrete pilings for the solar table supports would have a depth of 6 feet and a diameter of 1.5 feet. The equipment pad depths are 0.33 feet, and the powerline trenches will be 3 feet deep. Therefore, the ground disturbance for the project would occur likely in artificial fill, which has no paleontological potential. As such the only project activity that might have the potentially impact paleontological resources would be the concrete pile footings.

The holes for the pilings would likely be drilled with a backhoe that is equipped with an augur attachment. Each support structure would have one pile, so a total of 388 pilings would need to be installed. Installation of the pilings is expected to disturb only the surficial soils and not underlying soil units. This limited ground disturbance would not be expected to destroy any paleontological resources or unique geologic feature. Therefore, impacts would be less than significant.

3.4.8 Greenhouse Gas Emissions

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b)	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

This section of the document analyzes the impact the proposed Project would have on emissions that affect climate change around the world. Greenhouse Gas (GHG) emissions were analyzed as part of the CalEEMod air emission calculations. The CalEEMod output files are provided in Appendix E.

"Greenhouse gases" (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as "global warming." The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately one-half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (Less than Significant Impact)

The construction and operational GHG emissions for the proposed project are provided in Table 3-7. Construction of the Solar PV facility is expected to take less than one year.

As specified by the SCAQMD, the construction GHG emissions were amortized over 30 years and added to the annual operating GHG emissions. As shown in Table 3-7 the GHG emissions from the proposed Solar PV Project would be negative and as such below the CEQA Threshold established by the SCAQMD for industrial projects.

Table 3-7 Project GHG Emissions (MT/yr.)

Project Phase	CO_2	CO_2e
Construction Phase		
Site Preparation	3.13	3.16
Support Pile Installation	16.67	17.03
Solar PV System, Equipment, and Conduit Installation	18.25	18.62
Testing and Commissioning	3.18	3.29
Total Construction Phase	***41.23***	***42.10***
Operational Phase		
Offsite Mobile Sources	0.16	0.16
Vegetation Mowing	0.01	0.01
Water Use	0.01	0.01
Electrical Power Generation	(413.16)	(413.16)
Amortized Construction Emissions	1.37	1.40
Total	***(411.61)***	***(411.58)***
SCAQMD CEQA Threshold		10,000
Exceed Threshold?		No

Operational emission estimates calculated using CalEEMod Version 2022.1.1.29.
Electrical Power generation GHG saving estimated based upon system capacity of 1.5 MW, an annual solar capacity factor of 20%, and an SCE GHG intensity factor of 346.20 lbs/Mw-hr, which is from CalEEMod for estimate year 2026.
See Appendix D for detailed calculations.

The purpose of the project is to generate renewable electrical energy, which would offset electrical power generated by Southern California Edison (SCE) and the onsite gas turbine generator. This would result in an overall reduction of GHG emissions from electrical generation. The estimated reduction in GHG emissions was based on the grid using the estimated SCE 2026 GHG intensity factor from CalEEMod. The amount of GHG reduction would reduce overtime as the SCE system obtains more of its electrical power from renewable sources. Therefore, GHG emissions impacts would be less than significant.

b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? (No Impact)

Climate Change Scoping Plan - In 2006, the Legislature passed the California Global Warming Solutions Act of 2006 [Assembly Bill 32 (AB 32)], which created a comprehensive, multi-year program to reduce greenhouse gas (GHG) emissions in California. AB 32 required the California Air Resources Board (CARB or Board) to develop a Scoping Plan that describes the approach California will take to reduce GHGs to achieve the goal of reducing emissions to 1990 levels by 2020. The Scoping Plan was first approved by the Board in 2008 and must be updated at least every five years. Since 2008, there have been two updates to the Scoping Plan. Each of the Scoping Plans has included a suite of policies to help the State achieve its GHG targets, in large part leveraging existing programs whose primary goal is to reduce harmful air pollution.

The equipment used during construction would have to comply with the applicable GHG reduction programs for mobile sources in accordance with the Climate Change Scoping Plan to achieve the State's GHG reduction targets. The contractor who owns the equipment and vehicles is required to provide verification of compliance to the California Air Resources Board or the U.S. Environmental Protection Agency under state and federal law. The Project would help to implement some of the Climate Change Scoping Plan strategies as it relates to the development and use of renewable energy sources. The Project

would not conflict with regulations adopted to achieve the goals of the Climate Scoping Plan. No impact would occur.

City of Seal Beach - The City of Seal Beach has not yet developed a Greenhouse Gas Reduction Plan or Climate Action Plan. The City of Seal Beach General Plan, adopted in December 2003, does not contain an air quality element or a Climate Action Plan. The applicable GHG planning document for the City is the AB-32 Climate Change Scoping Plan discussed above.

3.4.9 Hazards and Hazardous Materials

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? (Less than Significant Impact)

The project would not involve the routine transport, use, or disposal of hazardous materials. Operation of the Solar PV Project would not involve the use of hazardous materials.

Project construction would involve the use and transport of typical construction-related materials such as fuels, lubricants, adhesives, and solvents. Heavy equipment not permitted on public roads would be refueled on-site, but no overnight fuel storage or maintenance of heavy equipment would occur on the Project site. Any onsite refueling operations would be conducted at the staging area, which is a flat level dirt pad. Any spills during refueling would be small and contained within the staging area.

The transformer that would be used on the site would use a biodegradable oil for cooling such as mineral oil or a type of vegetable oil. No hazardous substances as defined by the Hazardous Materials Transportation Uniform Safety Act would be used, transported, or disposed of as a part of the Project. Therefore, the project would not create a hazard to the public or the environment through routine transport, use or disposal of hazardous materials and the impact would be less than significant.

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? (Less than Significant Impact)

Solar facility equipment, including transformers and inverters, requires use of oils and lubricants in small quantities. Any leaks of transformer oil or solvents would be very limited, contained in a drip pan, and would be repaired to maintain proper functioning equipment. Very small quantities of solvents, cleaners, or other chemicals may be used during maintenance of the Project for cleaning equipment or to prevent corrosion.

The use, storage, and transport of hazardous materials throughout the operational life of the Project would be carried out in accordance with federal, state, and county regulations for transport, storage, and disposal of hazardous materials. Impacts from hazardous material releases during operation would be less than significant.

c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (No Impact)

The proposed Solar PV facility would not emit hazardous emissions or require the handling of hazardous or acutely hazardous material. Also, there are no schools located within one-quarter of a mile of the proposed Project site.

d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment? (No Impact)

The project site is not listed as a hazardous materials site compiled pursuant to Government Code Section 65962.5 and, as a result, project implementation would not create a significant hazard to the public or the environment.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? (No Impact)

The project is not located within an airport land use plan or in the vicinity of a public airport. The site is located over three miles from Los Alamitos Joint Forces Training Base (JFTB) and is not within the Airport Environs Land Use Plan (AELUP) for that facility.

f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (No Impact)

The project is required to meet all applicable fire codes and City regulations that provide for adequate access to and from the site and will not impair access. The Hellman OGPF site has two access points for emergency response and meets the requirement of Orange County Fire Authority (OCFA), and CalGEM. This project would not interfere with any emergency plans for either the City of Long Beach or the City of Seal Beach. All construction equipment and supplies will be stored on site away from public and

emergency access roads. As such, the project will not impair the implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan.

g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? (Less than Significant Impact)

Once constructed, the PV solar facilities would be built to meet all relevant California building standards, including building code, electrical code, and fire code requirements, thereby minimizing the potential for ignition to occur at the facility. In addition, routine maintenance at the Hellman OGPF facility includes vegetation management to ensure a defensible space is maintained consistent with the requirements of OCFA, and CalGEM. The Hellman OGPF maintains a Fire Protection Plan and has a firewater system. The oil storage facility has fire monitors that could be used in the unlikely event of a fire at the PV solar site. The nearest fire station to the Hellman OGPF site is OCFA Station 44, which is less than a mile from the site. Because the Project would be built to modern code requirements, would be maintained to have a defensible space around the facility, has a fire firewater system on site, the Project operational impacts related to hazards resulting from wildland fires are less than significant.

3.4.10 Hydrology/Water Quality

Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☒	☐
i. result in a substantial erosion or siltation on- or off-site;				
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☒	☐	☐
iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv. impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

The nearby San Gabriel River Estuary, which is hydrologically connected to the project site, is listed as an Impaired Waterbody, per the State Water Resources Control Board (SWRCB) 2014/2016 California Integrated Report, Clean Water Act Section 303(d) List/305(b) Report. Water quality impairments include copper, dioxin, indicator bacteria, nickel, and dissolved oxygen (SWRCB 2023).

Water use within the City's service area has been relatively stable in the past decade with an annual average of 3,482 AF for potable use. In fiscal year (FY) 2019-20, the City's water use was 3,273 AF of potable water (groundwater and imported). There is currently no recycled water use within the City's service area. In FY 2019-20, the City's water use profile was comprised of 70.4% residential use, 18.4% commercial, industrial, and institutional (CII) use, 0.5% large landscape/irrigation, with non-revenue water (NRW) comprising about 10.6% (Arcadis 2021).

The project site is not located within a 100-year flood zone, as designated by the Federal Emergency Management Agency (FEMA). The site is within Zone X, an area of 0.2% annual chance flood (i.e., 500-year flood plain); an area of 1% annual chance flood with average depths of less than 1 foot; an area with drainage areas less than 1 square miles; or an area protected by levees from 1% annual chance flood (FEMA 2023).

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? (Less than Significant)

Construction

Project construction would include 4.57 acres of ground disturbance, including areas for solar array tables, equipment pads, underground power lines, and staging areas (see Table 2-4, Proposed Project Site Disturbance Areas). The initial site preparation would involve removal of the vegetative cover, and the removal of any miscellaneous debris and other deleterious material. Organic matter and other material that may interfere with the completion of the work would be removed from the limits of the construction area. The site would require minimal grading since it is already flat and grading is not necessary for the installation of the solar support structures. Limited grading may be needed for the equipment pads areas. The project would not involve any cut and fill, or the import/export of any soil.

In the absence of proper soil management, ground disturbance and construction could result in wind and water erosion and associated sedimentation of the San Gabriel River, LCWA wetland areas, and Haynes Cooling Channel. Construction-related activities that primarily result in sediment releases are related to exposing previously stabilized soils to potential mobilization by rainfall/runoff and wind. Erosion and sedimentation affects water quality and interferes with photosynthesis; oxygen exchange; and the respiration, growth, and reproduction of aquatic species. Additionally, other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported off-site, which could contribute to degradation of water quality.

Non-sediment-related pollutants that are also of concern during construction relate to construction materials and non-stormwater flows and include construction materials (e.g., paint); chemicals, liquid products, and petroleum products used in construction or the maintenance of heavy equipment; and concrete-related pollutants.

Project construction impacts would be minimized through compliance with the Santa Ana Regional MS4 Permit (Order No. R8-2022-0008, NPDES No. CAS618000), which includes the City of Seal Beach, and the SWRCB Construction General Permit, which is the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Associated with Construction Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002). Because the proposed Project is greater than 1 acre in size, the applicant would be required to submit a Notice of Intent to the SWRCB in order to obtain approval to complete

construction activities under the Construction General Permit. This permit requires the discharger to perform a risk assessment for the proposed development (with differing requirements based upon the determined level) and to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). A Construction Site Monitoring Program that identifies monitoring and sampling requirements during construction is a required component of the SWPPP. The SWPPP is also required to include construction-phase Best Management Practices (BMPs) to be implemented. Typical BMPs that would be implemented during grading and construction of the proposed Project that would minimize degradation of surface water quality include erosion control, sediment control, waste/materials management, non-stormwater management, training and education, and inspections/maintenance/monitoring/sampling.

Proposed conduit trenches would be approximately 2 feet wide and 18 to 24 inches deep. Based on borings drilled for a geotechnical investigation of the Hellman Gas Plant Expansion, groundwater is present at a minimum depth of approximately 4 feet below ground surface (Wood 2018). Therefore, groundwater impacts are not anticipated during construction.

Through implementation of the requirements outlined in the Construction General Permit, construction-related impacts to surface water and groundwater would be minimized and impacts would be less than significant.

Operations

Panel washing would occur approximately once per year and would require approximately 2 days to complete. Approximately 1,500 gallons of water would be used during washing and no chemicals would be used. Water would be applied to the solar panels at a rate that would not result in runoff from the site. Wash water would be absorbed into the soil and vegetation underneath the panels. No other potential sources of water quality impairment would be introduced to the project site during operations. In addition, operational activities would be required to comply with the requirements of Seal Beach Municipal Code (SBMC) Chapter 9.20, Stormwater Management Program. SBMC Chapter 9.20 is enforced by City officials during the permit approval process. This chapter requires development projects to comply with the Orange County Drainage Area Management Plan (DAMP), which includes BMPs for properly storing waste material, to ensure the protection of water quality from stormwater runoff. As a result, operations-related impacts to surface water and groundwater would be minimized and impacts would be less than significant.

b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? (Less Than Significant)

As discussed for Threshold a), approximately 1,500 gallons of water would be used annually for panel washing. Water would be supplied from the City of Seal Beach water system. This small amount of water use would not substantially decrease groundwater supplies. The main source of water supply for the City is groundwater from the Orange County Groundwater Basin. Groundwater levels in this basin are managed within a safe basin operating range to protect the long-term sustainability of the basin and to protect against land subsidence. The Orange County Water District regulates groundwater levels in the basin by regulating the annual amount of pumping and setting the Basin Production Percentage for the water year. The Basin Production Percentage is the ratio of water produced from groundwater supplies within the district to all water produced within the district, from both supplemental sources and groundwater within the district (Arcadis 2021). As a result, the annual operational water demand of 1,500 gallons would not adversely impact groundwater supplies from the Orange County Groundwater Basin.

In addition, installation of solar arrays would not interfere with groundwater recharge, as stormwater would flow off the panels and would be absorbed into the adjacent unpaved, pervious ground surface, allowing for groundwater recharge. Therefore, impacts would be less than significant.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in a substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows? (Less Than Significant with Mitigation Incorporated)

The project site is currently vacant and covered in pervious surfaces. The project would introduce minimal new impervious surfaces to the site, including equipment pads. Proposed solar arrays would not increase impervious surfaces at the site, as stormwater would flow off the solar panels and onto the unpaved/pervious ground beneath the panels. Sheet flow of stormwater runoff would be maintained where possible, with water exiting the site in existing natural contours. The pattern and volume of runoff would not be substantially altered by the project. Vegetation would be allowed to regrow under the solar panels, which would minimize any project-related, long-term increased runoff associated with construction related ground disturbance, thus in turn minimizing potential soil erosion and off-site flooding. However, pending revegetation of the site, increased stormwater runoff could temporarily occur due to a lack of vegetation. Implementation of mitigation measure BIO-2 that limits the grading of the site and requires the existing vegetation to be cut and not removed would serve to reduce the potential for soil erosion. Increased runoff associated with ground disturbance could temporarily result in significant erosion induced water quality impacts. These impacts would be reduced to less than significant levels through implementation of Mitigation Measure HYD-1.

d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? (Less than Significant)

As previously discussed, the project site is not located within a 100-year flood zone, as designated by FEMA. The site is within Zone X, an area of 0.2% annual chance flood (i.e., 500-year flood plain); an area of 1% annual chance flood with average depths of less than 1 foot; an area with drainage areas less than 1 square miles; or an area protected by levees from 1% annual chance flood. Therefore, the potential for flooding is very low. In addition, as part of the approved Southern Los Cerritos Wetlands Restoration Project, a 6-foot earthen berm would be constructed along the southern perimeter of the project site to prevent any hydraulic connection between the project site and the proposed Southern Los Cerritos Wetlands Restoration Project, located to the south of the project site (Moffatt and Nichol 2023). This berm would further reduce the potential for flooding on-site.

The solar tables would be mounted a minimum of 18 inches off the ground and the inverters would be mounted approximately 3 to 4 feet off the ground; therefore, in the unlikely event 1 foot of flooding occurs, the solar tables and inverters would not be affected. In the event collector cables, power cables, transformers, and disconnect switches are inundated, or partially inundated, by 1 foot of flood waters, no pollutants would be released to the environment during operations.

The project site is located approximately 1 mile from the Pacific Ocean. The City of Seal Beach Local Hazard Mitigation Plan indicates that the project site is located outside of the City's projected tsunami inundation zone (City of Seal Beach 2019). The western boundary of the Hellman Ranch Oil and Gas Facility is located adjacent to the Department of Water and Power Haynes Cooling Channel and therefore would potentially

be susceptible to sloshing of water during a seiche. However, the proposed solar field is located along the northeast boundary of the facility, not in proximity to the channel, and would therefore not be susceptible to inundation by seiche.

A sea level rise analysis was completed in 2019 for the Hellman Ranch Gas Plant (Moffatt and Nichol 2019). Sea level rise impacts were evaluated for years 2060 and 2100. Impacts were evaluated under dry weather conditions and a 50-year storm event. In addition, eight sea level rise scenarios were evaluated based on low-, medium-, and high-risk aversions. Potential flood sources included the culvert to the San Gabriel River and internal Hellman Channel, the Haynes Cooling Channel, the San Gabriel River, and ocean water overtopping Highway 1.

Based on this analysis, a sea level rise of 2.5 feet and above (up to 9.9 feet, including a 50-year storm) would inundate the proposed solar field. With the completion of the Southern Los Cerritos Wetlands Restoration Project, the +2.5 ft sea level rise scenario would not inundate the PV solar facility site. Under +3.2 ft and +3.7 ft sea level rise scenarios in the year 2060, the Haynes Cooling Channel east bank would be overtopped, and floodwater will inundate the PV solar facility site (Moffatt and Nichol 2019). The expected life of the PV solar facility is 25 to 30 years.

However, in the event flooding occurs because of sea level rise, no pollutants would be released to the environment, as storage of petroleum products and/or hazardous substances would not occur on-site. If flooding due to sea level rise became an issue for the solar facility then the equipment could be raised or removed. Therefore, impacts would be less than significant.

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? (No Impact)

As discussed in Thresholds a) and c) above, construction related water quality impacts would be addressed through implementation of a site-specific SWPPP and associated BMPs, and operational water quality impacts would be addressed through MM-HYD-1, Interim Soil Stabilization Plan. As a result, the project would not conflict with implementation of goals and policies of the Water Quality Control Plan, Santa Ana River Basin (Basin Plan). In addition, as discussed in Threshold b, groundwater impacts would not occur as a result of the project. Therefore, the project would not conflict with implementation of the 2014 Sustainable Groundwater Management Act, the 2020 City of Seal Beach Urban Water Management Plan, or the 2015 Orange County Water District Groundwater Management Plan. No impact would occur.

Avoidance, Minimization and/or Mitigation Measures

Mitigation Measure HYD-1: Interim Soil Stabilization Plan - Prior to issuance of a Notice to Proceed by the City of Seal Beach (City), an Interim Soil Stabilization Plan shall be developed to the satisfaction of the City, detailing measures that will be taken to prevent soil erosion subsequent to construction and pending revegetation of the site. Examples of soil stabilization measures include construction of temporary desilting basins, use of natural and/or synthetic soil binders (i.e., tackifiers and soil stabilizers), straw wattle installation at regular intervals within solar arrays and around construction area perimeters, and revegetation with site-appropriate native plants. Site monitoring shall be completed every six months and after rainfall events of 1.0 inch or greater to ensure that soil stabilization methods are continuing to be effective. In the event that erosion is observed during monitoring, corrective actions shall be taken immediately to prevent additional erosion. The Interim Soil Stabilization Plan shall be implemented under the supervision of the City.

3.4.11 Land Use/Planning

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

a. Physically divide an established community? (No Impact)

Project implementation would not result in a physical division of an established community. Rather, the PV solar facilities would be located within the existing Hellman Ranch OGPF site, which is zones for industrial/oil extraction use. Therefore, no impacts would occur because of the proposed Project.

b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? (No Impact)

The PV solar facility would be located on the Hellman OGPF property, which is within the City's Planning Area 2 as shown in the City of Seal Beach 2003 General Plan Land Use Element. The Hellman OGPF site has a land use designation of Industrial-Oil Extraction (Figure 2, City of Seal Beach Land Use Element). The Hellman Ranch property is zoned S.P.R. (Specific Plan Regulation). The Hellman Ranch Specific Plan (HRSP) was adopted by the City in October 1997.

The Hellman Ranch Specific Plan consists of five Conservation Planning Areas and five Development Planning Areas. The PV solar project would be in Conservation Planning Area #4, which was for a public golf course. Portion of the Hellman OFPF and most of the Southern Los Cerritos Wetlands Restoration Project site are in Conservation Planning Area #4, which is designated the Hellman Ranch Reserve Golf Course. Permitted uses are mineral production and easements for utilities. Other uses are allowed with conditional use permits that the City finds to be within the intent of the Specific Plan (Hellman Ranch Specific Plan 1997).

In 2002, the California Coastal Commission issued a Coastal Development Permit that covered the Hellman OGPF property and other portions of the area covered by the Hellman Ranch Specific Plan. As such, the current provisions of the Hellman Ranch Specific Plan are inconsistent with the terms and conditions of this Coastal Development Permit. This fact is acknowledged in the City's 2003 General Plan, Land Use Element, which stated the City should amended Hellman Ranch Specific Plan to be consistent with the permit conditions of the California Coastal Commission Coastal Development Permit within 12 months after adoption of the General Plan. However, the Hellman Specific Plan has never been updated. The City should collaborate with the landowners within the Hellman Ranch Specific Plan to update the Plan to be consistent with the permit conditions of the California Coastal Commission Coastal Development Permit, and the Southern Los Cerritos Wetlands Restoration Project.

Given that the City's Municipal Code allows for utility facilities within the oil extraction districts with a minor use permit and the fact that utility easements are allowed in the Conservation Planning Area #4 the PV solar project would not conflict with land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, there would be no impact.

3.4.12 Mineral Resources

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?	☐	☐	☐	☒
b)	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

a. Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state? (No Impact)

The PV solar facility would be located on the Hellman OGPF site, which is a known oil and gas mineral resource. The PV solar facility would not impact the development or production of oil and gas from the Hellman Ranch site. Therefore, no impacts would occur because of the proposed Project.

b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? (No Impact)

The loss of known mineral resources of value to the region would not occur as a result of implementation of the PV solar project. The project site is not delineated as an important mineral resource recovery site on the City of Seal Beach General Plan or any other local plan. Therefore, no impacts would occur because of the proposed Project.

3.4.13 Noise

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b)	Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c)	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (Less than Significant with Mitigation Incorporated)

Chapter 7.15 of the SBMC sets noise standards of 65 dBA at commercial properties at any time, 55 dBA at residential properties from 7:00 a.m. to 10:00 p.m., and 50 dBA at residential properties from 10:00 p.m. to 7:00 a.m. Section 7.15.025 of the SBMC exempts construction noise when performed between 7:00 a.m. and 8:00 p.m. on weekdays, and between 8:00 a.m. and 8:00 p.m. on Saturday and never on Sundays or city-observed federal holidays.

The introduction of construction in this area would expose residents of the area to intermittently higher noise levels depending on the type of equipment being used during construction. Although the increase in noise in the proposed Project area would be greater than that which currently exists, it would be temporary in nature, would only occur during normal working hours, and would cease upon completion of construction.

The nearest residence would be about 480 feet from the construction site. Table 3-8 provides an estimate of the peak noise levels that would be expected during each phase of the construction activities. The peak construction noise would be expected to occur during the site preparation phase, with a noise level of approximately 68 dBA at the nearest residence. This phase of the project would only last 3 days.

Table 3-8 Peak Construction Noise Levels

Phase/Equipment	Quantity	Noise Level (dBA)	Distance (feet)
Site Preparation			
Rubber Tire Dozer	1	82	50
Grader	1	85	50
Backhoe/Loader	1	79	50
Water Truck	1	74	50
Combined Equipment Noise Level		***88***	***50***
Noise Level at Nearest Property Line		***96***	***20***
Noise Level at Nearest Receptor		***69***	***450***
Noise Level at Nearest Residential Receptor		***68***	***480***
Support Pile Installation			
Backhoe/Loader	1	79	50
Forklift	1	75	50
Generator	1	81	50
Water Truck	1	74	50
Combined Equipment Noise Level		***84***	***50***
Noise Level at Nearest Property Line		***92***	***20***
Noise Level at Nearest Receptor		***65***	***450***
Noise Level at Nearest Residential Receptor		***65***	***480***
Solar PV System, Equipment, and Conduit Installation			
Forklift	1	75	50
Backhoe/Loader	1	79	50
Generator	1	81	50
Welding Machine	1	74	50

Table 3-8 Peak Construction Noise Levels

Phase/Equipment	Quantity	Noise Level (dBA)	Distance (feet)
Water Truck	1	74	50
Combined Equipment Noise Level		***85***	***50***
Noise Level at Nearest Property Line		***93***	***20***
Noise Level at Nearest Receptor		***65***	***450***
Noise Level at Nearest Residential Receptor		***65***	***480***

Source: FHWA's Roadway Construction Noise Mode Database (2006). Table 9.1

Compliance with the City regulations regarding limitations on construction hours and noise restrictions would reduce potential project impacts to less than significant levels. Further, the City's standard construction regulations require all construction vehicles or equipment, fixed or mobile, to be equipped with properly operating and maintained mufflers to minimize noise.

Noise from operation of the solar PV project would be generated by the Inverters and transformers during daylight hours, when the panels are generating electrical power. Table 3-9 provides a summary of the noise levels associated with the inverters and transformers.

Table 3-9 Peak Operational Noise Levels

Equipment	Quantity	Nearest Property Line		Nearest Residential Receptor	
		Distance (ft)	Noise Level (dBA)	Distance (ft)	Noise Level (dBA)
Inverters (1-6)	6	30	54	1,030	23
Inverters (7-11)	5	85	44	940	23
Inverters (12,14)	2	25	50	550	24
Inverters (13,15,16)	3	130	38	500	26
Transformer	1	110	22	1,150	1

Noise would only occur during daylight hours when electrical power is being generated.

The operational noise levels would be below the 55 dBA standard set for residential properties between the hours of 7:00 a.m. to 10:00 p.m. at the nearest property line. Therefore, operational noise levels would be less than significant.

b. Generation of excessive groundborne vibration or groundborne noise levels? (Less Than Significant)

There should be very low levels of ground borne vibration or noise during construction due to the equipment that is being used for this project. None of the construction equipment would generate significant vibration levels, and any vibration would be transient. The operation of the PV solar facility would not result in any ground borne vibration or noise. Table 3-10 provides data on vibration annoyance criteria.

The project would not involve the use of pile drivers or other equipment that typically generate large amounts of ground borne vibration or noise. The Seal Beach Municipal Code states that no use, activity, or process shall produce vibrations that are perceptible without instruments by a reasonable person at or beyond the property line of the site on which they are situated (Seal Beach Municipal Code §11.4.10.020 Performance Standards).

Table 3-10 Human Response to Transient Vibration

Human Response	Maximum PPV (in/sec)
Barely Perceptible	0.035
Distinctly Perceptible	0.24
Strongly Perceptible	0.9
Severe	2.0

Source: Caltrans 2013.

Table 3-11 provides estimated vibration levels for construction equipment as a function of distance from the source.

Table 3-11 Estimated Construction Equipment Vibration Levels

Equipment	Vibration Level (in/sec)		
	at 25-feet	at 60-feet	at 450-feet
Backhoe/Caisson Drilling	0.089	0.024	0.001
Small Bulldozer	0.003	0.001	0.000
Large Truck	0.076	0.020	0.001

Source: Adapted from FTA 2006 and Caltrans 2013.
Property Boundary-60 feet; Nearest Receptor-450 feet.

Based on the threshold for transient vibration of 0.035 in/sec, construction equipment used for the PV Solar Project would not exceed the threshold beyond the property boundary. Therefore, vibration impacts would be less than significant.

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? (No Impact)

The project is not located within an airport land use plan or in the vicinity of a public or private airport. The project site is located over four miles from the Los Alamitos Joint Forces Training Base (JFTB), the closest such site, and is not within the Airport Environs Land Use Plan (AELUP) for that facility.

Avoidance, Minimization and/or Mitigation Measures

Mitigation Measure N-1 – Construction, grading, and haul truck deliveries shall not take place between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, 6:00 p.m. and 8:00 a.m. on Saturday, or at any time on Sunday or a national holiday.

3.4.14 Population/Housing

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

The construction workers would be drawn from the local Los Angeles Basin workforce. Construction of the PV Solar Project would take approximately three to four months. No new workers would be required to operate the PV solar facility. The existing Hellman Ranch OGFP staff would be adequate to monitor the facility.

a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? (No Impact)

The project involves the construction of a PV solar facility within the existing Hellman Ranch OGPF property. Given the limited staffing needs for the construction of the project, all required workers would be drawn from the local Los Angeles Basin workforce. As such, the project would not generate any population growth. Therefore, no impacts on the local population levels would occur.

b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? (No Impact)

The project would not displace existing housing as no housing exists on the proposed Project site. The project would not displace substantial numbers of people since it does not propose demolition of residential units. All construction and operational activities would occur within the existing Hellman Ranch OGPF property. Therefore, there would be no impact on housing from the proposed Project.

3.4.15 Public Services

Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:	☐	☐	☒	☐
i. Fire protection?				
ii. Police protection?	☐	☐	☐	☒
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒

a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

The PV Solar Project does not include relocation or construction of any governmental or other public facilities. The Project would not induce population growth in the area, as analyzed in Section 3.4.14 Population and Housing. The Project would not create demand for any public facilities that would result in the need for new or physically altered government facilities.

(i) Fire protection? (Less than Significant)

The PV solar facility would be constructed within the boundaries of the existing Hellman Ranch OGPF site, and all construction and operational activities would have to comply with the OGPF's Fire Protection Plan. Operation of the facility would not increase fire risk at the Hellman site and would not affect the current response times or emergency access for fire protection. Therefore, impacts on fire protection services from the proposed Project would be less than significant.

(ii) Police protection? (No Impact)

Construction and operation of the PV Solar facility would not require additional police support or increase demand for police protection services. Therefore, no impact on police services would occur.

(iii) Schools? (No Impact)

The PV Solar Project would not involve the development of residential homes or residential zoned property. The facility would be located on property with a land use designation of industrial, oil extraction. Given the short duration of the construction and the limited number of workers, the project would not increase families in the area. It is expected that workers would commute to the site from the local area. Therefore, no impact on schools would occur.

(iv) Parks? (No Impact)

The PV Solar Project would not impact any parks in the City of Seal Beach or the surrounding areas. Therefore, no impact on parks would occur.

(v) Other public facilities? (No Impact)

The PV Solar Project would only require four to ten construction workers depending upon the project phase. The longest construction phase would last about 21 days with total construction lasting three to four months. No permanent workers would be required for operation of the facility. As such, the proposed Project would not result in any additional population growth that could increase demand for other public services. Therefore, no impact on other public services would occur.

3.4.16 Recreation

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? (No Impact)

The proposed Project involves the construction and operation of a new PV solar facility within the existing Hellman Ranch OGPF property. The proposed Project would only require four to ten construction workers depending upon the project phase. The longest construction phase would last about 21 days with total construction lasting three to four months. No permanent workers would be required for operation of the facility. As such, the proposed Project would not result in any additional population growth that could increase demand for parks or other recreational facilities. The project would be exempt from park dedication fees or from dedicating land for park uses in keeping with the City's current parkland dedication requirements. Therefore, no impact on parks or recreational facilities would occur.

b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? (No Impact)

The proposed Project does not include any recreational facilities or require the construction or expansion of recreational facilities. Therefore, no impacts would occur.

3.4.17 Transportation

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b)	Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☒	☐
c)	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d)	Result in inadequate emergency access?	☐	☐	☐	☒

Access to the Hellman Ranch OGPF is from Pacific Coast Highway via a private road at the intersection of First Street. This intersection is controlled by an existing traffic signal. Secondary access to the site is provided to the Hellman Ranch OGPF site from Seal Beach Boulevard via Adolfo Lopez Drive. This access point is used for employees to access wells located on Seal Beach Boulevard. This access point is also available to emergency response vehicles. Traffic associated with the proposed Project would use the private road entrance from Pacific Coast Highway as the main access point to the project site.

No new employees would be needed for operation of the PV solar facility. The existing Hellman staffing would be adequate to monitor the facility. Maintenance work on the facility would be done by outside contracts and would require only eight visits per year (5 for general maintenance, 2 for vegetation control and one for solar panel washing).

Peak day construction trips would be about four round trips for trucks delivering material and supplies, and 11 round trips for workers and vendors. This peak would be expected to occur for about 20 days during the equipment installation phase. Table 3-12 provides a summary of the vehicle trips for each of the construction phases.

Table 3-12 Construction Vehicle Trips

Activity	Duration (days)	Round Trips per Day			Peak Hourly One-Way Trips		
		Workers	Vendors	Delivery Trucks	Workers	Vendors	Delivery Trucks
Site Preparation	3	6	0	2	6	0	2
Support Pile Installation	21	8	1	4	8	1	2
Solar PV System, Equipment, and Conduit Installation	20	10	1	4	10	1	2
Testing and Commissioning	20	4	2	0	4	2	0

Source: Newport Solar

a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? (Less Than Significant Impact)

The City of Seal Beach is not serviced by Amtrak or any other rail service. There is bus service along Pacific Coast Highway in Seal Beach, which is used for access to the project site. The nearest bus stop is located just south of 1st Street on Pacific Coast Highway. The Hellman site is accessed via 1st Street and Pacific Coast Highway. The limited traffic associated with the proposed Project would not impact on any of these bus stops.

Pacific Coast Highway in the vicinity of the project site has a Class II bike lane (on road, stripped lanes). The intersection of 1st and Pacific Coast Highway is signalized and has crosswalks with pedestrian signals. The limited traffic associated with the proposed Project would not impact the existing Class II bike lane.

As discussed above, the proposed Project will generate a small amount of traffic during construction with a peak average daily trip (ADT) of 15 round trips. For operations it would be a peak average daily trip of one round trip. This is less than the traffic impact analysis threshold (1,600 vehicle trips per day) specified in the Orange County 2023 Congestion Management Program (CMP) (OCTA, 2023). The temporary construction traffic and very limited operational traffic would not exceed the Orange County 2023 Congestion Management Program threshold for traffic impact analysis so impacts would be less than significant.

b. Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)? (Less Than Significant Impact)

Construction of the PV solar facility would generate a total of 22,342 Vehicle miles traveled (VMT) over the three to four months of construction. Operation of the facility would generate 480 VMT per year. This compares with 3.17 billion VMT in orange county during the first quarter of 2023 on urban area freeways (OCTA, 2023). As such, construction of the PV solar facility would have minimal impacts (if any) on Vehicle Miles Traveled (VMT) on the surrounding area.

The Governor's Office of Land Use and Climate Innovation (LCI) formerly known as the Office of Planning and Research (OPR), Technical Advisory on Evaluating Transportation Impact in CEQA with the new VMT requirement states the following: "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." Here, the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks (OPR 2018). OPR also indicates that "absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact" (OPR 2018).

According to LCI, lead agencies may generally assume that a project would not have significant VMT impacts if the project would either: (1) generate fewer trips than the level for studying consistency with the applicable congestion management program or (2) where the applicable congestion management program does not provide such a level, fewer than 110 vehicle trips per day. As discussed in item (a), the proposed Project would not exceed the Orange County CMP thresholds. Therefore, the Project uses the screening criterion of 110 net new peak hour vehicle trips as the level at which most projects would not typically generate a substantial increase in VMT. The proposed project would not exceed the 110 peak hour vehicle trips, and therefore, impact would be considered less than significant.

c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? (No Impact)

The proposed Project would not require the construction of any new public roads or create any new incompatible uses for local roadways. No new private roads would need to be created for the proposed Project. Therefore, there would be no impact.

d. Result in inadequate emergency access? (No Impact)

The existing Hellman Ranch OGPF site has two access points for emergency service vehicles. The addition of the PV solar facility would not alert the existing emergency access to the site. Therefore, there would be no impact on emergency access.

3.4.18 Tribal Cultural Resources

Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☒	☐	☐
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
ii.	A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k). (Less Than Significant with Mitigation Incorporated)

Many archeological investigations have been conducted on the Hellman property over the past 50 years in support of both oil/gas and residential development. The most recent archeological field investigation was done in 2019 in support of a proposed gas plant approximately 320 feet southwest of the current project area (Wahoff 2019). As part of the 2019 study, a records search was conducted at the South Central Coastal Information Center (SCCIC) at California State University at Fullerton.

The 2019 records search revealed that at least 18 previous cultural resources surveys or other archaeological investigations have been conducted within 0.25 miles of the current Project area, and that the entire Project area has been intensively surveyed for archaeological resources on at least four occasions (Archaeological Associates 1980; Rosenthal and Padon 1990; Stickel 1996; York and Willey 2004). None of these field surveys revealed any cultural resources within the Project area, although one (Archaeological Associates 1980) noted two dispersed scatters of marine shell (CA-ORA-850 and -851) located approximately 500 and 50 feet east and northeast of the Project area, respectively.

Other cultural resources within 0.25 mile include CA-ORA-257, -258, and -259, all consisting of remnants of prehistoric shell middens along the crest of Landing Hill to the south of the Project area (Redwine 1958; Stickel 1996; Cleland et al. 2007); P-30-01544, a large but dispersed scatter of marine shell and artifacts located on the Boeing property immediately north of Adolfo Lopez Drive (Underwood 2000); and the Los Alamitos Pump Station, approximately 550 feet north of the Project area (Shepard 2002).

The records search identified seven cultural resources within the 0.25-mile-radius buffer radius of the proposed Project site. These resources include six prehistoric archaeological sites and one historic structure. Of the six archaeological sites, one consists of milling features with a scatter of groundstone or flaked stone artifacts; one is a groundstone scatter with a flaked lithic; one is a lithic and shell scatter, and three have midden deposits. Of these three midden sites, one also includes a shell scatter, and one a scatter of flaked stone and groundstone artifacts. The historic structure is a historic-period flood pump station. None of the resources were located within the Project Area of Direct Impact (ADI).

Given the disturbed nature of the proposed Project site and the fact that limited ground disturbance activities would occur, it is unlikely that cultural resources would be found during the construction

activities. However, given the culturally sensitive nature of the Hellman property and the surrounding areas the mitigation measures CR-1, TCR-1, TCR-2, and TCR-3 should be implemented. Impacts would be considered less than significant with mitigation incorporated.

ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. (Less Than Significant with Mitigation Incorporated)

For purposes of impact analysis, a tribal cultural resource is considered a site, feature, place, cultural landscape, sacred place, or object which is of cultural value to a California Native American Tribe and is either on or eligible for the California Register or a local historic register.

The City sent notification letters on December 8, 2023 to the California Native American Tribes that requested inclusion on the City's AB 52 notification list. As of the end of March 2024, the City had received one written response from the Gabrieleno Band of Mission Indians – Kizh Nation (Kizh). This comment letter focused on the need for Native American monitoring during ground disturbance at the project site. The City has verbal discussions with a representative of the Gabrielino Tongva Indians of California Tribal Council. Their concern was also about having Native American monitors present during ground disturbance activities.

The Gabrielino Tongva Indians of California Tribal Council has historically done archeological/Native American monitoring on the Hellman Properties and had been to the proposed Project site for consultation with the Applicant. The Applicant has agreed to use Gabrielino Tongva Indians of California Tribal Council members to conduct archeological/Native American monitoring of all ground disturbance activities associate with the proposed Project. In addition, the Applicant has committed to having an archeologist present during all ground disturbance activities.

Given the culturally sensitive nature of the Hellman property and the surrounding areas the mitigation measures CR-1, TCR-1, TCR-2, and TCR-3 should be implemented. Impacts would be considered less than significant with mitigation incorporated.

Avoidance, Minimization and/or Mitigation Measures

Mitigation Measure TCR-1: Native American Monitoring – The project Applicant shall retain a Native American Monitor that shall be approved by the City of Seal Beach. The monitor shall be retained prior to the commencement of any ground-disturbing activity associated with the project. Ground-disturbing activity shall include, but is not limited to, demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching. A copy of the monitoring agreement between the Applicant and the Native American monitor shall be submitted to the City as of the approval process.

The Native American monitor may complete daily monitoring logs that provide descriptions of the relevant ground-disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, any cultural-related materials found, and any other facts, conditions, materials, or discoveries of significance. Monitor logs shall identify and describe any discovered tribal cultural resources (TCRs), including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs shall be provided to the project Applicant/City upon written request to the Native American monitor.

Mitigation Measure TCR-2: Unanticipated Discovery of Tribal Cultural Resource Objects (Non-Funerary/Non-Ceremonial) – Upon discovery of any TCRs, all construction activities in the immediate vicinity of the discovery shall cease (i.e., not less than the surrounding 50 feet) and shall not resume until the discovered TCR has been fully assessed by the Native American Monitor and archeologist. The Native American Monitor shall recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate, in the Tribe's sole discretion, and for any purpose the Tribe deems appropriate, including for educational, cultural and/or historic purposes.

Mitigation Measure TCR-3: Unanticipated Discovery of Human Remains and Associated Funerary or Ceremonial Objects – Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in Public Resources Code Section 5097.98, are also to be treated according to this statute. If Native American human remains and/or grave goods are discovered or recognized on the project site, then Public Resource Code 5097.9 as well as Health and Safety Code Section 7050.5 shall be followed. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2). Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or burial goods. Any discovery of human remains/burial goods shall be kept confidential to prevent further disturbance.

3.4.19 Utilities/Service Systems

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☒	☐	☐
b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c)	Result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d)	Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

The Hellman Ranch OGPF is served by Southern California Edison (SCE) for electrical power and by the City of Seal Beach water and wastewater infrastructure. The PV solar facility would be a net generator of

electric power. No wastewater would be generated as part of the proposed Project. Water use would be limited to 1,500 gallons one per year for washing the solar panels.

Would the Project:

a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? (Less than Significant Impact with Mitigation Incorporated)

The project would not require the construction of new storm water drainage facilities. All runoff from the PV solar panels would remain on site. No new water or wastewater treatment facilities would need to be constructed for the proposed Project. There would be no new or expanded natural gas facilities.

The City has water pipelines that are in the vicinity of proposed Solar PV Project. Figure 3-6 shows the location of the water pipelines in the vicinity of the proposed Project. The City requires a 30 foot clearance on either side of the pipelines to allow for maintenance work. The 12-inch water pipeline that runs down the service road for the Los Alamitos Retention Basin comes the closest to the PV Solar Panels. The closest the PV Solar project components come to the southern edge of the service road is about 40 feet, which is greater than the 30 feet required by the City. To ensure that the 30 foot distance is maintained between the project components and the City waterlines mitigation measure USS-1 shall be implemented. Impacts would be considered less than significant with mitigation incorporated.

Figure 3-6 City Waterlines in Vicinity of PV Solar Project



Source: Google, Google Earth data © Google 2023, and Maps Provided by City of Seal Beach.

b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? (No Impact)

The total volume of water needed for dust control throughout construction is approximately 22,000 gallons, which is not a substantial volume of water, and is only a onetime water use. Operations would require 1,500 gallons per year washing the solar panels. Water would be obtained from the existing water system at the Hellman OGPF site, which is supplied by the City of Seal Beach. There would be sufficient water supplies available to serve the proposed Project from existing entitlements and resources. No new or expanded entitlements would be needed. Therefore, there would be no impact.

c. Result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? (No Impact)

The PV solar facility would not generate any wastewater and would not require any modifications to the existing sewer or water connections that currently exist at the Hellman OGPF site. The site would have portable toilets for use by the construction workers. Therefore, there would be no impact.

d. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? (Less and Significant Impact)

The Hellman Ranch property is currently served by the Frank R. Bowerman landfill. The Frank R. Bowerman Landfill is a state-of-the-art, Class III, municipal solid waste landfill. Opened in 1990 near Irvine, CA, it is permitted for 11,500 tons per day (TPD) maximum with an 8,500 TPD annual average. The landfill has enough projected capacity to serve residents and businesses until approximately 2053. Operation of the PV solar facility would not generate any solid waste.

Construction of the Project would generate small volumes of construction waste (e.g., equipment packaging and trash generated by workers). The small quantity of waste generated would not be more than the capacity of the landfill. Therefore, the impact would be less than significant.

e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste? (No Impact)

All local, state, and federal guidelines regarding solid waste will be complied with during project construction and operation. Therefore, there would be no impact.

Avoidance, Minimization and/or Mitigation Measures

Mitigation Measure USS-1: Buffer to City Waterlines – The Applicant shall maintain a minimum of 30 feet from City waterlines for all project components. The final project drawings shall show the distance from the SV Solar Project to the 12-inch City waterline that is in the Los Alamitos Retention Basin service road.

3.4.20 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b)	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

Wildfire risk in California is evaluated on a three-tier scale based on fire hazard severity potential: very high, high, and moderate. The California Department of Forestry and Fire Protection (CALFIRE) maps all areas in the state that could fall under any tier of this scale and divides these areas into zones. This Plan is concerned with the location of Very High Fire Hazard Severity Zones (VHFHSZs). The City of Seal Beach has no land that is currently classified as VHFHSZs. Seal Beach does not have a history of wildfires. As the City has become increasingly developed over time, the amount of land where wildfires could emerge has shrunk. Given how little undeveloped land remains in Seal Beach that the City directly controls, it is unlikely that the City will be affected by a wildfire of any significance (City of Seal Beach, 2019).

a. Substantially impair an adopted emergency response plan or emergency evacuation plan? (No Impact)

The project is required to meet all applicable fire codes and City regulations that provide for adequate access to and from the site and would not impair access. The project would not impair the implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, there would be no impact.

b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? (No Impact)

The PV solar facility would be located with the existing Hellman Ranch OGPF in an area that would not be expected to increase the risk of wildfire in the area. Construction of the proposed Project would not change the slope site or otherwise affect wind patterns in the area that would exacerbate wildfire risks. The site would not require grading or recontouring. The solar panels would be low to the ground (mounted approximately 18-inches to 4 feet above the ground surface) and would not affect wind directions or wind patterns. Therefore, no impact would occur.

c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? (Less than Significant)

No new roads, fuel breaks, or emergency water sources would be installed as part of the proposed Project.

Brush and vegetation within the Project site would be mowed or weed wacked at the start of construction which would minimize the risk of igniting a wildlife. After construction, low vegetation would be allowed to grow under the solar panels. The potential for solar panel failure that would result in fires is very low because solar panels do not generate sparks or contain parts that are known to start fires. During operation vegetation management would occur that would involve mowing the vegetation within the project area.

The power lines installed with the solar panels would all be placed underground, where the risk for igniting fires would be very low. The transformers and inverters would be contained with electrical boxes. The risk of ignition from these electrical components would be low because the electrical box would contain any potential sparks in the event of an equipment malfunction.

The PV solar facility would also have access to the existing Hellman OGPF firewater system. The water monitors at the oil storage facility would be able to provide firewater to the PV solar facility in the unlikely event of a fire. Therefore, the impact would be less than significant.

d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes? (Less than Significant)

The PV solar facility is surrounded by urbanized uses and borders the Heron Pointe water quality basin. As described in Section 3.4.7, Geology and Soils, the Project site is relatively flat and has not historically been affected by landslides, nor has the area directly surrounding the Project. Construction of the Project would not involve substantial grading that could result in landslides because of post-fire instability. As described in Section 3.4.10, Hydrology and Water Quality, the drainage patterns of the Project site would not be altered during construction. In the unlikely event of a fire at the PV solar facility it could spread to other areas if it was contained. The PV solar facility would be subject to the existing Hellman OGPF Fire Protection Plan, which covers the entire facility site. The Hellman OGPF also has an extensive firewater system that is adequate to address any fire at the PV solar facility. As such, the PV solar facility would not pose a significant risk to people or structures due to runoff, post-fire slope instability or drainage changes due to the flat topography of the site. Therefore, the impacts would be less than significant.

3.4.21 Mandatory Findings of Significance

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

As described in Section 3.4.4, Biological Resources, construction of the PV Solar facility has the potential to affect habitat, wildlife, and plants. Mitigation measures have been provided to reduce these impacts to less-than-significant levels. Construction of the Project would not substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal. The impact on habitat and populations of fish and wildlife would be less than significant with the mitigation measures identified in Section 3.4.4.

As discussed in Section 3.4.5, Cultural Resources, no important examples of California history or prehistory are known to occur within the Project site. Given the limited amount of grading needed, and the fact that the site has been previously disturbed, the potential for impacting cultural resources is limited. Implementation of the identified mitigation measures would reduce the potential impacts to unknown cultural resources to less than significant.

b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

The PV solar Project would have no significant operational impact that can't be mitigated. Potential glare impacts can be mitigated to a level of insignificance using identified solar panel design measures. The solar facility operations would be monitored as part of the Hellman facility operations by the existing facility staff. The solar facility maintenance would be dispatched on an as-needed basis in response to equipment malfunction or decreased facility performance.

Most of the impacts from the project would be associated with construction and were found to be either less than significant or have no impact. All the construction impacts would be temporary in nature, lasting at most three to four months. Some of the construction impacts were found to be less than significant with mitigation incorporated (Biology Resources, Cultural Resources, Hydrology/Water Quality, Utilities/Service Systems, and Tribal Cultural Resources).

The cumulative projects identified in the Project area are the proposed Los Cerritos Wetlands Authority (LCWA) Southern Los Cerritos Wetlands Restoration Project, the City Hellman Ranch Watermain Rehabilitation Project, and a few Caltrans Project along Highway 1.

The LCWA Southern Los Cerritos Wetlands Restoration Project (Phase I) and the City waterline Project would be near the PV Solar Project and could use the same route to access their respective project sites (First Street and the access road to the Hellman Property).

Los Cerritos Wetlands Restoration Project is expected to be completed in two phases with Phase 1 expected to begin in September 2025 and to end in mid-2027. The Phase 1 restoration activities would focus on enhancing existing habitat areas in closer proximity to the existing muted tidal channel connection via the culvert connected to the San Gabriel River. Phase 2 restoration activities would expand tidal wetlands throughout the Project Area by creating a full tidal connection with the Haynes Cooling Channel (LCWA. 2023). The major construction activities associated with the Phase I Southern Los Cerritos Wetlands Restoration Project include the following:

- Raising 1st Street utilizing a box bridge system and fill;
- Reconfiguring utilities on 1st Steet, including undergrounding utilities and anchoring utilities to the box bridge;
- Removing the culverts under the existing dirt access roads and replacing the existing culverts and headwalls under 1st Street with two standard cement 12 foot boxes to create a box bridge;
- Constructing earthen berms to control flooding;
- Grading the site, including excavation to create tidal channels, which is expected to produce approximately 60,000 cubic yards of material;
- Clearing and grubbing the site to remove non-native and invasive species, including removal of approximately 100 trees; and
- Remediating soils (e.g., on-site treatment, excavation, testing and removal, or cap in place) that have been impacted by oil operations, including removal and hauling approximately 22,000 cubic yards of contaminated soils (LCWA 2025).

The anticipated construction schedule for Phase I Southern Los Cerritos Wetlands Restoration Project is as follows:

- Begin Construction: September 2025,
- Clear and Grub; Rough Grading/Earthwork in ESHA: Fall 2025 – Winter 2026,
- Rough Grading Complete: Summer 2026,
- Bridge and Road Work: Spring – Summer 2026,
- Install public amenities and trails: Spring – Fall 2026,
- Install irrigation: Fall 2026,
- Install landscaping: Fall 2026 – Winter 2027,
- Plant establishment period: Winter- Spring 2027 (3 Months), and
- Project complete: May 2027 (LCWA 2025).

Construction of the LCWA Project has the potential to impact similar resources as the proposed Project during their major grading/construction activities. Based upon the current schedule, the LCWA Project would have completed all of the major grading/construction activities by the end of summer 2026, which would be before the beginning of construction of the proposed Project, which is estimated to start in September 2026. If construction activities of both projects were to overlap, the Adolfo Lopez Drive access could be used as an alternative for accessing the site. Given that the major grading/construction activities for the LCWA Project would not overlap with construction of the proposed Project, cumulative impacts with the LCWA Wetland Restoration Project would be less than significant.

City Hellman Ranch Watermain Rehabilitation Project would involve digging about four to eight pits along the pipeline to expose the pipeline to allow for the installation of a pipeline liner. The number of pits will depend upon the manufacturer chosen to install the lining system. Figure 3-6 shows the location of this existing 18-inch watermain. The City is proposing to use a cured-in-place pipe lining (CIPP) system that involves a resin-impregnated pipe liner that is either injected into the pipe with air or water or pulled in with a winch. The liner is then cured at ambient temperature or by using hot water, steam, or UV light. The Watermain Rehabilitation Project would be expected to generate temporary traffic and air emissions during the project, which would likely take a few months to complete. It is unlikely to have biological and cultural resource impacts since most of the pipeline is within existing roads and in previously disturbed areas. The City will need to complete this project prior to the road work associated with the LCWA Project along First Street, which is expected to be complete in Summer of 2026. (The LWCA Project will raise the height of First Steet where the City has an easement for their existing 18-inch watermain). The City has indicated they anticipate the work to occur in the Fall of 2025. If for some reason the construction phases of the projects overlapped, the Adolfo Lopez Drive access could be used as an alternative for accessing the site. Given the current timing of the projects, there should be no overlap of construction, and therefore no cumulative impacts with the City Watermain Rehabilitation Project.

Caltrans has several potential projects in the vicinity of the proposed Project.

- Caltrans has a planned project to widen and upgrade the rails on the Highway 1 San Gabriel River bridge in Long Beach. The project would also add a Class II bike lane. This project is currently in the design phase and was budgeted for the 24/25 fiscal year (Caltrans 2024); However, it has not been scheduled due to pending approvals. The schedule for this work is not known.
- Caltrans plans to undertake a safety improvement project on State Route 1 (SR-1) between the Santa Ana River Bridge (PM 21.5) and Anderson Street (PM 31.1) in the City of Huntington Beach, in the

County of Orange. This is south of the proposed Project area. The project will add comprehensive Class II bike lanes in both directions along SR-1 within the stated limits. The project is expected to be completed by July of 2026, which would be before construction of the proposed Project would begin (Caltrans 2024a,b).

- Caltrans is in the process of removing and replacing the existing traffic signal systems at 20 intersections to enhance traffic signal poles, equipment and lighting between Crystal Heights Drive in Newport Beach and First Street in Seal Beach. This project began in August of 2023 and is expected to be completed October of 2025 (Caltrans 2024b).

These projects would not impact on the same area as the solar PV project, as it relates to biological and cultural resources so there would be no cumulative impacts for these issue areas. The third listed project could impact traffic flow along Highway 1 during the installation of the new traffic signals, but the solar PV project has minimal construction traffic, and as such the projects contribution to cumulative traffic would be less than significant.

Therefore, the solar PV project's contribution to cumulative impact would be less than significant with mitigation incorporated.

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The PV Solar Project would not have any environmental effects which would cause substantial adverse effects on human beings. Direct and indirect impacts on human beings from Project construction and operation are addressed in Sections 3.4.3, Air Quality; 3.4.9, Hazards and Hazardous Materials; 3.4.13, Noise; and 3.4.20, Wildfire and show that the impacts are either less than significant or no impact.

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5.0 List of Preparers

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Appendix A

Mitigation Monitoring Program

MITIGATION MONITORING PROGRAM CHECKLIST

Project Name.: Hellman Solar PV Electrical System Project **Applicant:** Hellman Properties, LLC

Initial Study/MND Approved by: Shaun Temple **Date:** July 14, 2025

Mitigation Measures No. / Implementing Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date /Initials	Sanctions for Non-Compliance
Aesthetics						
Mitigation Measure AES-1: Construction Lighting – Any construction lighting shall be shielded and directed only toward the construction area so as not to impact surrounding areas	CDD	C	During construction	A		4
Mitigation Measure AES-2: Solar Panel Design – The solar panels shall be installed facing south with a fixed tilt angle of 10 degrees. The solar panels shall be constructed of dark-colored materials and shall be covered with an anti-reflective coating. These requirements shall be documented on the final project drawing submitted to the City for approval.	CDD	B/D	Prior to Issuance of Building Permit Prior to Operation	A/C		2/4
Air Quality						
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.	CDD	C	During construction	A		4

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Mitigation Measures No. / Implementing Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date /Initials	Sanctions for Non-Compliance
Biological Resources						
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.	CDD	B	Prior to Issuance of Building Permit	A/C		2
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.	CDD	C	During Construction	A		4
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.	CDD	B	Prior to Construction	D		2
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	CDD	B	Prior to Construction	D		2

MITIGATION MONITORING PROGRAM CHECKLIST

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Mitigation Measures No. / Implementing Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date /Initials	Sanctions for Non-Compliance
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 E), 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.	CDD	B	Prior to Construction	D		2
Cultural Resources						
Mitigation Measure CR-1: Archeological Monitoring and Unanticipated Discovery Treatment Plan – Prior to issuance of a grading permit an Archeological Monitoring and Unanticipated	CDD	B	Prior to Issuance of Building Permit	D		2

MITIGATION MONITORING PROGRAM CHECKLIST

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Mitigation Measures No. / Implementing Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date /Initials	Sanctions for Non-Compliance
Discovery Treatment Plan shall be submitted to the City Community Development Department for review and approval. The plan shall be prepared by a City approved archaeologist. The qualified archeologist shall coordinate with the Native American monitors during the preparation of the plan. The plan shall outline areas that will be designated Environmentally Sensitive Areas, if needed. Significant or unevaluated archaeological resources that are being avoided and are within 50 feet of the construction zone shall be designated as Environmentally Sensitive Areas. The resources shall be delineated with exclusion markers to ensure avoidance. The plans shall specify the monitoring procedures, the field and laboratory methods that would be used for treatment of unanticipated discoveries, and the requirements for Native American participation in the monitoring and treatment activities. Procedures outlined shall include stop-work and protective measures, notification protocols, procedures for significance assessments, and appropriate treatment measures. The plan shall state avoidance or preservation in place is the preferred manner of mitigating impacts to historical resources, unique archaeological resources, and contributors to the significance of the tribal cultural landscape but shall provide procedures to follow should avoidance be infeasible in light of factors such as the nature of the find, project design, costs, and other considerations. The plan shall outline the protocols and procedures to be followed if human remains and associated funerary objects or grave goods are uncovered.						
Mitigation Measure CR-2: Archaeological Monitoring – An archaeologist, approved by the City of Seal Beach, shall be present at the site during all ground disturbance activities.	CDD	B/C	Prior to Issuance of Building Permit During Construction	D/A		4

MITIGATION MONITORING PROGRAM CHECKLIST

Project Name.: Hellman Solar PV Electrical System Project **Applicant:** Hellman Properties, LLC

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Mitigation Measures No. / Implementing Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date /Initials	Sanctions for Non-Compliance
Hydrology and Water Quality						
Mitigation Measure HYD-1: Interim Soil Stabilization Plan - Prior to issuance of a Notice to Proceed by the City of Seal Beach (City), an Interim Soil Stabilization Plan shall be developed to the satisfaction of the City, detailing measures that will be taken to prevent soil erosion subsequent to construction and pending revegetation of the site. Examples of soil stabilization measures include construction of temporary desilting basins, use of natural and/or synthetic soil binders (i.e., tackifiers and soil stabilizers), straw wattle installation at regular intervals within solar arrays and around construction area perimeters, and revegetation with site-appropriate native plants. Site monitoring shall be completed every six months and after rainfall events of 1.0 inch or greater to ensure that soil stabilization methods are continuing to be effective. In the event that erosion is observed during monitoring, corrective actions shall be taken immediately to prevent additional erosion. The Interim Soil Stabilization Plan shall be implemented under the supervision of the City.	BO	B/E	Prior to Issuance of Building Permit Post Construction	D/A		2/4
Mitigation Measure HYD-2: Design of Solar Table Risers – The solar table risers shall be designed so they can be increase in height by adding additional riser sections in the event that the PV solar facility becomes subject to flooding due to sea level rise. The design elements for adding additional riser sections shall be shown on the facility design drawing submitted to the City for approval.	BO	B/D	Prior to Issuance of Building Permit	D/A		2/4
Noise						
Mitigation Measure N-1 – Construction, grading, and haul truck deliveries shall not take place between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, 6:00 p.m. and 8:00 a.m. on Saturday, or at	BO	C	During Construction	A		4

MITIGATION MONITORING PROGRAM CHECKLIST

Project Name.: Hellman Solar PV Electrical System Project **Applicant:** Hellman Properties, LLC

Initial Study/MND Approved by: Shaun Temple **Date:** July 14, 2025

Mitigation Measures No. / Implementing Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date /Initials	Sanctions for Non-Compliance
any time on Sunday or a national holiday.						
Tribal Cultural Resources						
Mitigation Measure TCR-1: Native American Monitoring – The project Applicant shall retain a Native American Monitor that shall be approved by the City of Seal Beach. The monitor shall be retained prior to the commencement of any ground-disturbing activity associated with the project. Ground-disturbing activity shall include, but is not limited to, demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching. A copy of the monitoring agreement between the Applicant and the Native American monitor shall be submitted to the City as of the approval process. The Native American monitor may complete daily monitoring logs that provide descriptions of the relevant ground-disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, any cultural-related materials found, and any other facts, conditions, materials, or discoveries of significance. Monitor logs shall identify and describe any discovered tribal cultural resources (TCRs), including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs shall be provided to the project Applicant/City upon written request to the Native American monitor.	CDD	B/C	Prior to Issuance of Building Permit During Ground Disturbance Activities	A/D		2

MITIGATION MONITORING PROGRAM CHECKLIST

Project Name.: Hellman Solar PV Electrical System Project **Applicant:** Hellman Properties, LLC

Initial Study/MND Approved by: Shaun Temple **Date:** July 14, 2025

Mitigation Measures No. / Implementing Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date /Initials	Sanctions for Non-Compliance
Mitigation Measure TCR-2: Unanticipated Discovery of Tribal Cultural Resource Objects (Non-Funerary/Non-Ceremonial) – Upon discovery of any TCRs, all construction activities in the immediate vicinity of the discovery shall cease (i.e., not less than the surrounding 50 feet) and shall not resume until the discovered TCR has been fully assessed by the Native American Monitor and archeologist. The Native American Monitor shall recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate, in the Tribe's sole discretion, and for any purpose the Tribe deems appropriate, including for educational, cultural and/or historic purposes.	CDD	C	During Ground Disturbance Activities	A/D		4
Mitigation Measure TCR-3: Unanticipated Discovery of Human Remains and Associated Funerary or Ceremonial Objects – Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in Public Resources Code Section 5097.98, are also to be treated according to this statute. If Native American human remains and/or grave goods are discovered or recognized on the project site, then Public Resource Code 5097.9 as well as Health and Safety Code Section 7050.5 shall be followed. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2). Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or burial goods. Any discovery of human remains/burial goods shall be kept confidential to prevent further disturbance.	CDD	C	During Ground Disturbance Activities	A/D		4

MITIGATION MONITORING PROGRAM CHECKLIST

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Mitigation Measures No. / Implementing Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date /Initials	Sanctions for Non-Compliance
Utilities/Service Systems						
Mitigation Measure USS-1: Buffer to City Waterlines – The Applicant shall maintain a minimum of 30 feet from City waterlines for all project components. The final project drawings shall show the distance from the SV Solar Project to the 12-inch City waterline that is in the Los Alamitos Retention Basin service road.	BO	B	Prior to Issuance of Building Permit	C		2

Key to Checklist Abbreviations

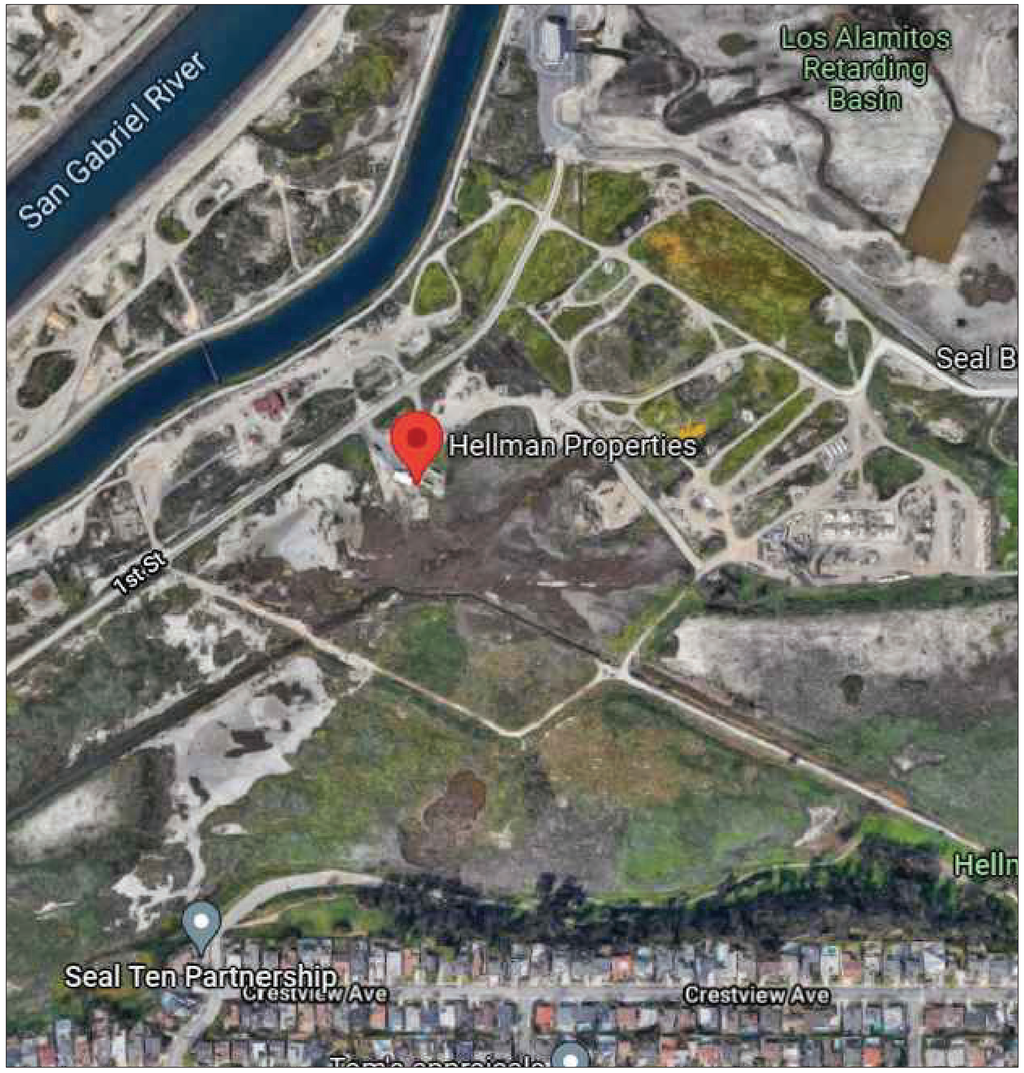
Responsible Person	Monitoring Frequency	Method of Verification	Sanctions
CDD - Community Development Director or designee	A - With Each New Development	A - On-site Inspection	1 - Withhold Recordation of Final Map
PD - Planning Director or designee	B - Prior To Construction	B - Other Agency Permit / Approval	2 - Withhold Grading or Building Permit
CE - City Engineer or designee	C - Throughout Construction	C - Plan Check	3 - Withhold Certificate of Occupancy
BO - Building Official or designee	D - On Completion	D - Separate Submittal (Reports/Studies/ Plans)	4 - Stop Work Order
PO - Police Captain or designee	E - Operating		5 - Retain Deposit or Bonds
FC - Fire Chief or designee			6 - Revoke CUP
			7 - Citation

Appendix B

Hellman Solar PV Electrical System Drawings

HELLMAN PROPERTIES
SEAL BEACH
SOLAR PV ELECTRICAL SYSTEM
INSTALLATION DRAWINGS

PROJECT SITE



GENERAL NOTES

SCOPE OF WORK:
THE INSTALLATION OF A GROUND MOUNTED SOLAR PHOTOVOLTAIC (PV) PLANT INCLUDING PV MODULES, AND GRID INTERACTIVE INVERTERS, AND RACKING STRUCTURE TO SUPPLY POWER TO THE FACILITY IN PARALLEL WITH THE EXISTING ELECTRIC UTILITY GRID.

PROJECT LOCATION:
711 1ST STREET, SEAL BEACH, CA 90740
APN: 095-010-68

INTERCONNECTION:
THE PV SYSTEM WILL OPERATE IN PARALLEL WITH THE ELECTRIC UTILITY SERVICE PROVIDER. THE INVERTERS PROVIDE ANTI-ISLANDING PROTECTION AS WELL AS HARMONIC LIMITS THAT COMPLY WITH UL 1741, IEEE 1547, AND IEEE 519.

CODE ENFORCED:
CALIFORNIA ELECTRICAL CODE, 2019 EDITION
CALIFORNIA BUILDING CODE, 2019 EDITION
CALIFORNIA FIRE CODE, 2019 EDITION

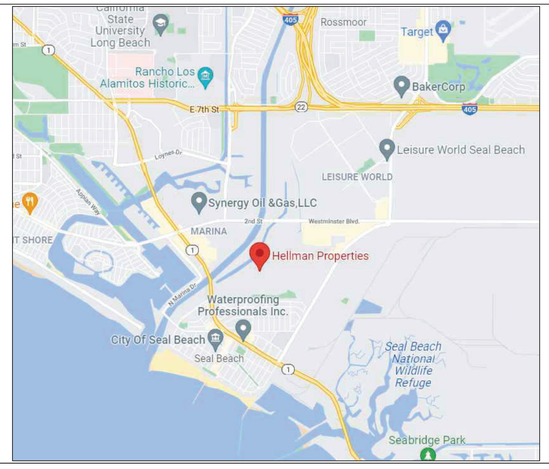
AUTHORITY HAVING JURISDICTION:
SEAL BEACH BUILDING AND SAFETY

ELECTRIC UTILITY SERVICE PROVIDER:
SOUTHERN CALIFORNIA EDISON (SCE)

SHEET INDEX

PV1	COVER SHEET
PV2	PROPERTY SITE PLAN
PV3	SITE PLAN
PV4	RACKING DETAILS
PV5	SINGLE LINE DIAGRAM
PV6	WIRE CHART
PV7	SIGNAGE
PV8	PV SYSTEM EQUIPMENT DATA SHEETS
9-16	RACKING SHOP DRAWINGS

SITE LOCATION



GENERAL NOTES

PV SYSTEM DETAILS	
DC SYSTEM SIZE	1,503.50 kW
AC SYSTEM SIZE	1600.0 kW
DC / AC RATIO	0.94
POCC / POI VOLTAGE	600Y/347V
ROOFTOP PV SYSTEM DETAILS	
ROOFTOP PHOTOVOLTAIC MODULES	
MANUFACTURER	HANWHA Q CELL
MODEL	Q. PEAK DUO XL-G10.2
DC POWER @ STC	485W
TOTAL MODULES	3100
INVERTER	
MANUFACTURER	CHINT POWER SYSTEMS
MODEL	CPS SCH100KTL-DO/US-600
AC POWER RATING	100kW
QUANTITY	16
RACKING	
MANUFACTURER	SOLCOMPONENTS
TYPE	GROUND MOUNT FIXED TILT
TILT / AZIMUTH	10°/ 180°
NUMBER OF ARRAYS	56
PV MODULES PER ARRAY	56, (1) ARRAY W/ 20

NEWPORT POWER
205 AVENIDA DEL MAR #1384
SAN CLEMENTE, CA 92674
WWW.NEWPORTPOWER.COM
760-271-6580

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Newport Power
LIC # 939960
EXP: 11/30/2023

X James Reeve

HELLMAN PROPERTY
SITE ADDRESS
711 1ST STREET,
SEAL BEACH, CA 90740
APN: 095-010-68

No.	Description	Date

COVER SHEET

PV1

12/06/2022

PV INVERTERS
#1,2,3,4,5,6

PV SUBPANEL #1
[6b]800A

PV SYSTEM
AC DISCONNECT
SWITCHES

UTILITY ELECTRICAL
MAIN SERVICE PANEL

PARCEL BOUNDRY
APN: 095-010-68

PV INVERTERS
#7,8,9,10,11

PV SUBPANEL #2
[6a]800A

PV SYSTEM
SUBPANEL

PV SYSTEM
TRANSFORMER

TRENCHING PATH
(VIF)

PV SUBPANEL #3
[6a]800A

(N)GROUND MOUNT PV ARRAY
(3100) HANWHA Q PEAK DUO XL-G10.2 485 MODULES
TILT: 10°/Azimuth: 180°
(16) CHINT CPS SCH100KTL-DO/US-600 INVERTERS

PV INVERTERS
#12,14

PV INVERTERS
#13,15,16

OFFICE

HERON

SCALE: $\frac{1}{8}$" = 1'

NEWPORT POWER
205 AVENIDA DEL MAR #1384
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X James Reeve

HELLMAN PROPERTY

SITE ADDRESS
711 1ST STREET,
SEAL BEACH, CA 90740
APN: 095-010-68

No.	Description	Date

PROPERTY
SITE PLAN

PV2

12/06/2022

PV INVERTERS
#1,2,3,4,5,6

PV SUBPANEL #1
[6b]800A

PV SYSTEM
AC DISCONNECT
SWITCHES

UTILITY ELECTRICAL
MAIN SERVICE PANEL

PARCEL BOUNDRY
APN: 095-010-68

PV INVERTERS
#7,8,9,10,11

PV SUBPANEL #2
[6a]800A

PV SYSTEM
SUBPANEL

PV SYSTEM
TRANSFORMER

TRENCHING PATH
(VIF)

PV SUBPANEL #3
[6a]800A

(N)GROUND MOUNT PV ARRAY
(3100) HANWHA Q PEAK DUO XL-G10.2 485 MODULES
TILT: 10°/Azimuth: 180°
(16) CHINT CPS SCH100KTL-DO/US-600 INVERTERS

PV INVERTERS
#12,14

PV INVERTERS
#13,15,16

SCALE: $\frac{3}{16}$" = 1'

NEWPORT POWER
205 AVENIDA DEL MAR #1384
SAN CLEMENTE, CA 92674
WWW.NEWPORTPOWER.COM
760-271-6580

Confidentiality Statement:
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Newport Power
LIC # 939960
EXP: 11/30/2023

X James Reeve

HELLMAN PROPERTY

SITE ADDRESS
711 1ST STREET,
SEAL BEACH, CA 90740
APN: 095-010-68

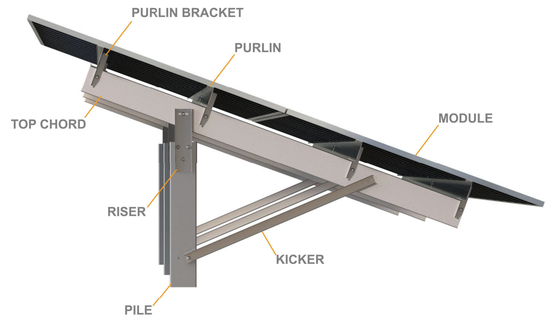
No.	Description	Date

SITE PLAN

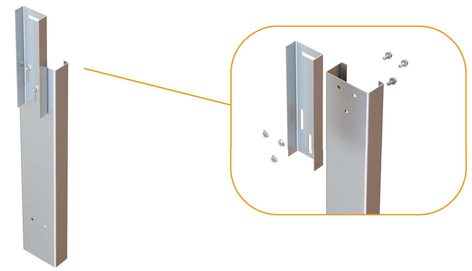
PV3

12/06/2022

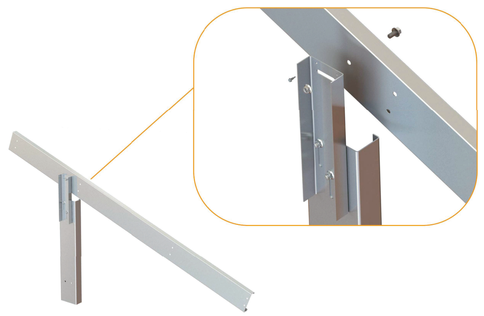
SYSTEM OVERVIEW



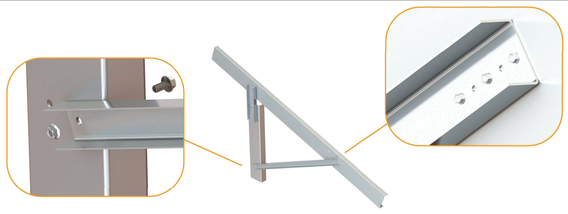
RISER INSTALLATION



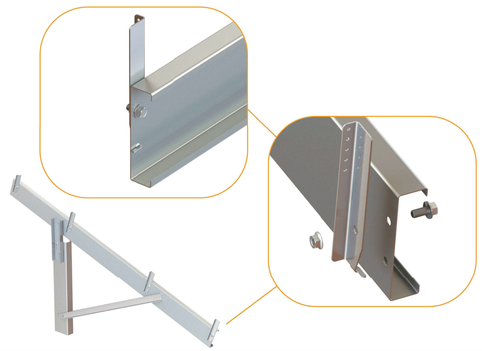
TOP CHORD INSTALLATION



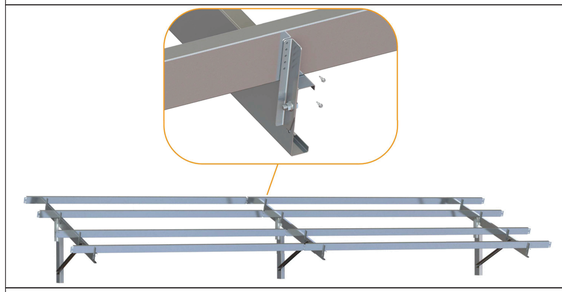
KICKER INSTALLATION



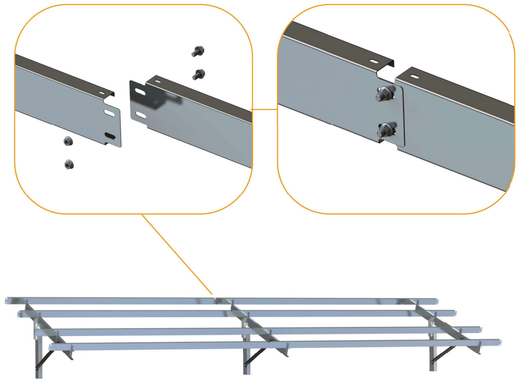
PURLIN BRACKET INSTALLATION



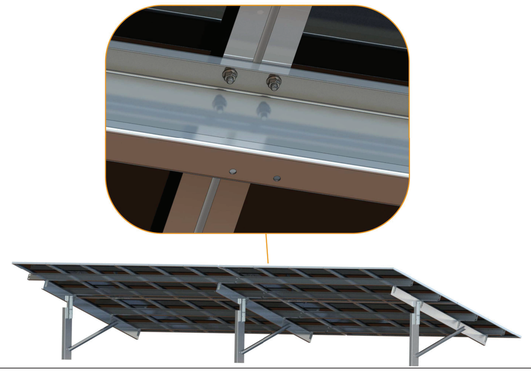
PURLIN INSTALLATION



COPED PURLIN SPLICE INSTALLATION



MODULE INSTALLATION



PURLIN SPLICE BRACKET INSTALLATION

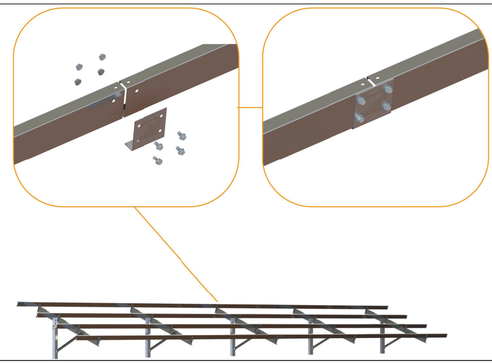
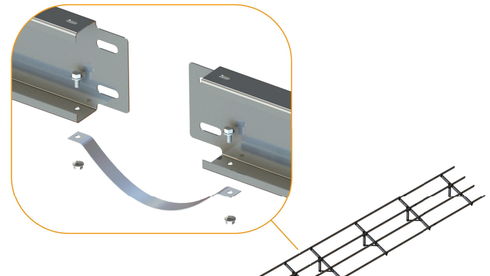
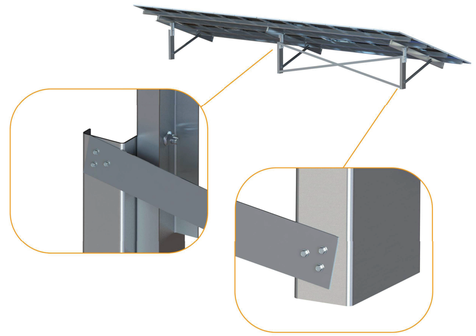


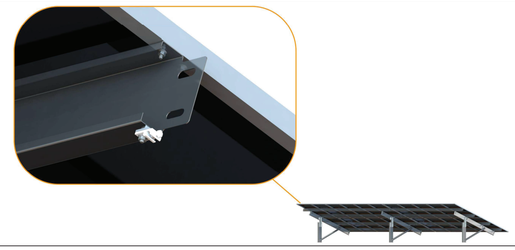
TABLE SPLICE INSTALLATION



OPTIONAL LATERAL BRACING INSTALLATION



SYSTEM BONDING AND GROUNDING



NEWPORT POWER
205 AVENIDA DEL MAR #1384
SAN CLEMENTE, CA 92674
WWW.NEWPORTPOWER.COM
760-271-6580

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Newport Power
LIC # 939960
EXP: 11/30/2023

X James Reeve

HELLMAN PROPERTY

SITE ADDRESS
711 1ST STREET,
SEAL BEACH, CA 90740
APN: 095-010-68

No.	Description	Date

RACKING DETAILS

PV4

12/06/2022

INVERTERS: #1
11X[(20)485W MODULES]

INVERTER #2
11X[(20)485W MODULES]

INVERTER #3
12X[(18)485W MODULES]

INVERTER #4
10X[(18)485W MODULES]

INVERTER #5
10X[(18)485W MODULES]

INVERTERS: #6
10X[(18)485W MODULES]

INVERTERS: #7
9X[(20)485W MODULES]

INVERTER #8
8X[(20)485W MODULES]

INVERTER #9
12X[(18)485W MODULES]

INVERTERS: #10
12X[(18)485W MODULES]

INVERTERS: #11
10X[(20)485W MODULES]

INVERTERS: #12
9X[(20)485W MODULES]

INVERTER #13
8X[(20)485W MODULES]

INVERTER #14
12X[(18)485W MODULES]

INVERTERS: #15
12X[(18)485W MODULES]

INVERTERS: #16
10X[(20)485W MODULES]

(-)
(+)
DC1
(N) HANWHA Q CELLS
Q PEAK DUO XL-G10.2 485
485W PV MODULES

DC2.1 DC3.1 DC4.1 DC5.1 DC6.1 DC7.1 DC8.1 DC9.1 DC10.1 DC11.1 DC12.1 DC13.1 DC14.1 DC15.1 DC16.1 DC17.1
FREE IN AIR
(1) RUN OF #6 AWG PV WIRE
#6 AWG THWN-2 GEC

JUNCTION BOX

DC2.2 DC3.2 DC4.2 DC5.2 DC6.2 DC7.2 DC8.2 DC9.2 DC10.2 DC11.2 DC12.2 DC13.2 DC14.2 DC15.2 DC16.2 DC17.2
(1) 3" CONDUITS
(4) #6 AWG PV WIRE
#6 AWG THWN-2 GEC

(N) CHINT POWER SYSTEMS
PV INVERTER
CPS SCH100KTL-DO/US-600
600V, 3PH, 4W,
96.20A OUTPUT

AC1.1 AC1.2 AC1.3 AC1.4 AC1.5 AC1.6 AC1.7 AC1.8 AC1.9 AC1.10 AC1.11 AC1.12 AC1.13 AC1.14 AC1.15 AC1.16
(1) 2" CONDUITS
(3) 2/0 AWG CU THWN-2
(1)2/0 AWG CU THWN-2 NEUTRAL
#6 AWG THWN-2 GEC

6a
800A (3P)
MAIN
125A (3P) X1

(N) 800A SUB PANEL
800A MAIN BREAKER
600V, 3PH, 4W

AC2.1
(2) PARALLEL RUNS
(5")CONDUITS
(3)700 KCMIL THWN-2
(1)700 KCMIL THWN-2 NEUTRAL
#1/0 AWG THWN-2 GEC

6a
700A (3P)
MAIN
125A (3P) X1

(N) 800A SUB PANEL
800A MAIN BREAKER
600V, 3PH, 4W

AC2.2
(2) PARALLEL RUNS
(5")CONDUITS
(3)500 KCMIL THWN-2
(1)500 KCMIL THWN-2 NEUTRAL
#1/0 AWG THWN-2 GEC

6a
700A (3P)
MAIN
125A (3P) X1

(N) 800A SUB PANEL
800A MAIN BREAKER
600V, 3PH, 4W

AC2.3
(2) PARALLEL RUNS
(5")CONDUITS
(3)500 KCMIL THWN-2
(1)500 KCMIL THWN-2 NEUTRAL
#1/0 AWG THWN-2 GEC

KEY	QTY	DESCRIPTION
1	1	(E) 1200A MAIN SERVICE PANEL: 1200A MAIN 12,000V, 3PH, 3W, 18kAIC
2	1	(N) 100A AC DISCONNECT 12,000V, 3PH, 3W, 18kAIC, FUSED W/ 100A FUSES
3	1	(N) 2,000KVA TRANSFORMER PRIMARY: 12,000V DELTA (3W), SECONDARY: 600V WYE (4W)
4	1	(N) 2000A AC DISCONNECT 600/347V, 3PH, 4W, FUSED W/ 2000A FUSES
5	1	(N) 2,000A SUB PANEL: 2,000A DISCONNECT SWITCH 600/347, 3PH, 4W
6a	1	(N)800A SUB PANEL: 700A MAIN BREAKER 600/347V, 3PH, 4W
6b	2	(N)800A SUB PANEL: 800A MAIN BREAKER 600/347V, 3PH, 4W
7	16	(N) CHINT POWER SYSTEMS CPS SCH100KTL-DO/US-600 600V, 3PH, 4W, 106.8A OUTPUT
8	56	(N) JUNCTION BOX
9	3100	(N)HANWHA Q CELL, Q. PEAK DUO XL-G10.2 485 RATED POWER: 485W V_{OC}:53.64V , I_{SC}:11.29A , V_{MP}: 45.07V , I_{MP}: 10.76A

(N) 2,000A SUB PANEL
EQUIPPED W/
2,000A LOAD SECTION
2,000A DISCONNECT SECTION
UTILITY NGO METER SOCKET
600/347V, 3PH, 4W

5 2,000A LOAD SECTION | 2,000A DISCONNECT SECTION

RESERVED FOR FUTURE METERING EQUIPMENT

15A (3P) X1
15A (3P) X1
15A (3P) X1
15A (3P) X1
700A(3P) X1
700A(3P) X1
800A(3P) X1

NGO M

GRD

(N) 2,000A
AC DISCONNECT
600/347V, 3PH, 4W,
FUSED W/
2,000A FUSES

4

GRD

AC3.0
(8)5" CONDUITS
(8) PARALLEL RUNS OF 400 KCMIL THWN-2
400 KCMIL THWN-2 NEUTRAL
250 KCMIL THWN-2 GEC

(N) 2,000KVA
TRANSFORMER
PRIMARY
12,000V, DELTA 3W
SECONDARY
600V, WYE 4W

3

GRD

AC4.0
(8)5" CONDUITS
(8) PARALLEL RUNS OF 400 KCMIL THWN-2
400 KCMIL THWN-2 NEUTRAL
250 KCMIL THWN-2 GEC

(N) 100A AC DISCONNECT
12,000V, 3PH, 3W, 18kAIC,
FUSED W/ 100A FUSES

2

N
GRD

AC5.0
(1)2½" CONDUIT
(1) RUN OF 250 KCMIL NL-EPR
250 KCMIL THWN-2 NEUTRAL
#2 AWG THWN-2 GEC

AC6.0
(1)2½" CONDUIT
(1) RUN OF 250 KCMIL NL-EPR
250 KCMIL THWN-2 NEUTRAL
#2 AWG THWN-2 GEC

(E) GROUND ROD OR UFER WITH
MINIMUM 3/0 COPPER GEC

(E) GROUND ROD OR UFER WITH
MINIMUM 3/0 COPPER GEC

(N) SOLAR LINE SIDE CONNECTION

PANEL MODIFICATIONS REQUIRE FIELD EVALUATION BY NRTL UNLESS THE PANEL INCLUDES THE PROVISION FOR A TAP AS PART OF THE LISTED ASSEMBLY

NEUTRAL TO BE CONNECTED ON THE LINE SIDE OF THE NEUTRAL LINK IN THE MAIN BREAKER SECTION

1 (E) 1200A MAIN SERVICE PANEL,
(E) 1200A MAIN BREAKER
12,000V, 3PH, 3W,18 kAIC
SCE METER # 222020-005847

DISTRIBUTION SECTION

1200A/3P MAIN BREAKER VACUUM CIRCUIT BREAKER

MISC FACILITY LOADS

BIDIRECTIONAL METER INSTALLED BY SOUTHERN CALIFORNIA EDISON

M

PULL SECTION

GRD

IRREVERSIBLE CONNECTION TO (E)GROUND ROD

SERVICE FROM UTILITY

(E) GROUND ROD OR UFER WITH
MINIMUM 3/0 COPPER GEC

NEWPORTPOWER
Delivering the Power of the Sun

NEWPORT POWER
205 AVENIDA DEL MAR #1384
SAN CLEMENTE, CA 92674
WWW.NEWPORTPOWER.COM
760-271-6580

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Newport Power
LIC # 939960
EXP: 11/30/2023

X James Reeve

HELLMAN PROPERTY

SITE ADDRESS
711 1ST STREET,
SEAL BEACH, CA 90740
APN: 095-010-68

No.	Description	Date

SINGLE LINE

PV5

12/06/2022

		WIRING CHART													WIRE RATING CHART								TERMINATION		VOLTAGE DROP			
		CALLOUT	AMPS Isc	NEC MULTIPLIER	AMPS MAX	PARALLEL RUNS	# OF CONDUCTORS	CONDUCTOR SIZE	CONDUCTOR MATERIAL	CONDUCTOR INSULATION	NEUTRAL SIZE	GROUND SIZE	CONDUIT QUANTITY	CONDUIT SIZE	WIRE TEMPERATURE RATING	WIRE AMBIENT TEMPERATURE °C	CURRENT CARRYING CONDUCTORS	WIRE AMP RATING	WIRE TEMPERATURE DERATE	WIRE CONDUCTOR DERATE	DERATED WIRE RATING >= AMPS MAX	TERMINATION TEMPERATURE RATING	TERMINATION AMP RATING >= AMPS MAX	Vdrop AMPS Imp	Vdrop VOLTAGE Vmp	Vdrop DISTANCE	Vdrop PERCENT
		DC1	11.29	1.56	17.61	1	2	#10 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	40	0.91	1	(40 A)X(0.91)X(1)=36.4>=17.61	60	30>=17.61	10.76	45.07	3.5	0.207
SUBPANEL #1	INVERTER #1	DC2.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	901.40	50	0.093
		DC2.2	11.29	1.56	17.61	1	22	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	22	55	0.91	0.45	(55 A)X(0.91)X(0.45)=22.52>=17.61	60	40>=17.61	10.76	901.40	185	0.344
		AC1.1	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #2	DC3.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	901.40	50	0.093
		DC3.2	11.29	1.56	17.61	1	22	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	22	55	0.91	0.45	(55 A)X(0.91)X(0.45)=22.52>=17.61	60	40>=17.61	10.76	901.40	335	0.622
		AC1.2	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #3	DC4.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	811.26	50	0.103
		DC4.2	11.29	1.56	17.61	1	24	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	24	55	0.91	0.45	(55 A)X(0.91)X(0.45)=22.52>=17.61	60	40>=17.61	10.76	811.26	125	0.258
		AC1.3	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #4	DC5.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	811.26	50	0.103
		DC5.2	11.29	1.56	17.61	1	20	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	22	55	0.91	0.50	(55 A)X(0.91)X(0.50)=25.03>=17.61	60	40>=17.61	10.76	811.26	140	0.289
		AC1.4	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #5	DC6.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	811.26	50	0.103
		DC6.2	11.29	1.56	17.61	1	20	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	22	55	0.91	0.50		60	40>=17.61	10.76	811.26	185	0.382
		AC1.5	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #6	DC7.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	811.26	50	0.103
		DC7.2	11.29	1.56	17.61	1	20	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	22	55	0.91	0.50	(55 A)X(0.91)X(0.50)=25.03>=17.61	60	40>=17.61	10.76	811.26	335	0.691
		AC1.6	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	SUB#1 OUTPUT	AC2.1	577.20	1.25	721.50	2	4	700 KCMIL	CU	THWN-2	700 KCMIL	#1 AWG	2	5"	90	40	3	520	0.91	1	(520 A)X(0.91)X(1)=473.20>=360.25	60	385>=360.25	288.60	600	275	0.679
SUBPANEL #2	INVERTER #7	DC8.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	901.40	50	0.093
		DC8.2	11.29	1.56	17.61	1	18	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	18	55	0.91	0.50	(55 A)X(0.91)X(0.50)=25.03>=17.61	60	40>=17.61	10.76	901.40	190	0.353
		AC1.7	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #8	DC9.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	901.40	50	0.093
		DC9.2	11.29	1.56	17.61	1	16	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	16	55	0.91	0.50	(55 A)X(0.91)X(0.50)=25.03>=17.61	60	40>=17.61	10.76	901.40	290	0.539
		AC1.8	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #9	DC10.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	811.26	50	0.103
		DC10.2	11.29	1.56	17.61	1	24	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	24	55	0.91	0.45	(55 A)X(0.91)X(0.45)=22.52>=17.61	60	40>=17.61	10.76	811.26	190	0.392
		AC1.9	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #10	DC11.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	811.26	50	0.103
		DC11.2	11.29	1.56	17.61	1	24	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	24	55	0.91	0.45	(55 A)X(0.91)X(0.45)=22.52>=17.61	60	40>=17.61	10.76	811.26	290	0.599
		AC1.10	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #11	DC12.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	901.40	50	0.093
		DC12.2	11.29	1.56	17.61	1	20	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	22	55	0.91	0.50	(55 A)X(0.91)X(0.50)=25.03>=17.61	60	40>=17.61	10.76	901.40	230	0.427
		AC1.11	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	SUB#2 OUTPUT	AC2.2	481.00	1.25	601.25	2	4	500 KCMIL	CU	THWN-2	500 KCMIL	#1 AWG	2	5"	90	40	3	430	0.91	1	(430 A)X(0.91)X(1)=391.30>=300.63	60	320>= 300.63	240.50	600	400	0.877
SUBPANEL #3	INVERTER #12	DC13.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	901.40	50	0.093
		DC13.2	11.29	1.56	17.61	1	18	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	18	55	0.91	0.50	(55 A)X(0.91)X(0.50)=25.03>=17.61	60	40>=17.61	10.76	901.40	225	0.418
		AC1.12	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	#2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #13	DC14.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	901.40	50	0.093
		DC14.2	11.29	1.56	17.61	1	16	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	16	55	0.91	0.50	(55 A)X(0.91)X(0.50)=25.03>=17.61	60	40>=17.61	10.76	901.40	150	0.279
		AC1.13	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	#2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	220	0.423
	INVERTER #14	DC15.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	811.26	50	0.103
		DC15.2	11.29	1.56	17.61	1	24	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	24	55	0.91	0.45	(55 A)X(0.91)X(0.45)=22.52>=17.61	60	40>=17.61	10.76	811.26	150	0.310
		AC1.14	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	#2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	20	0.039
	INVERTER #15	DC16.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	811.26	50	0.103
		DC16.2	11.29	1.56	17.61	1	24	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	24	55	0.91	0.45	(55 A)X(0.91)X(0.45)=22.52>=17.61	60	40>=17.61	10.76	811.26	150	0.310
		AC1.15	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	#2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	220	0.423
	INVERTER #16	DC17.1	11.29	1.56	17.61	1	2	#8 AWG	CU	PV WIRE	N/A	#6 BARE	FREE IN AIR		90	40	2	55	0.91	1	(55 A)X(0.91)X(1)=50.05>=17.61	60	40>=17.61	10.76	901.40	50	0.093
		DC17.2	11.29	1.56	17.61	1	20	#8 AWG	CU	PV WIRE	N/A	#6 BARE	1	3"	90	40	22	55	0.91	0.50	(55 A)X(0.91)X(0.50)=25.03>=17.61	60	40>=17.61	10.76	901.40	75	0.139
		AC1.16	96.20	1.25	120.25	1	4	2/0 AWG	CU	THWN-2	#2/0 AWG	#6 AWG	1	2"	90	40	3	195	0.91	1	(145 A)X(0.91)X(1)=177.45>=120.25	60	145>=120.25	96.20	600	220	0.423
	SUB#3 OUTPUT	AC2.3	481.00	1.25	601.25	2	4	500 KCMIL	CU	THWN-2	500 KCMIL	#1 AWG	2	5"	90	40	3	430	0.91	1	(430 A)X(0.91)X(1)=391.30>=300.63	60	320>=300.63	240.50	600	800	1.753
AC OUTPUT (600V)		AC3.0	1539.2	1.25	1924.0	8	4	400 KCMIL	CU	THWN-2	400 KCMIL	250 KCMIL	8	4"	90	40	3	380	0.91	1	(380 A)X(0.91)X(1)= 345.8>=240.50	60	280>=240.50	192.40	600	20	0.039
TRANSFORMER (600V)		AC4.0	1539.2	1.25	1924.0	8	4	400 KCMIL	CU	THWN-2	400 KCMIL	250 KCMIL	8	4"	90	40	3	380	0.91	1	(380 A)X(0.91)X(1)= 345.8>=240.50	60	280>=240.50	192.40	600	20	0.039
TRANSFORMER (12,000V)		AC5.0	76.96	1.25	96.20	1	4	#1 AWG	CU	NL-EPR	#1 AWG	#2 AWG	1	4"	90	40	3	145	0.91	1	(145 A)X(0.91)X(1)= 131.95>=96.20	60	110>=96.20	76.96	12,000	20	0.002
AC OUTPUT (12,000V)		AC6.0	76.96	1.25	96.20	1	3	#1 AWG	CU	NL-EPR	#1 AWG	#2 AWG	1	4"	90	40	3	145	0.91	1	(145 A)X(0.91)X(1)= 131.95>=96.20	60	110>=96.20	76.96	12,000	50	0.012

KEY	QTY	DESCRIPTION
1	1	(E) 1200A MAIN SERVICE PANEL: 1200A MAIN 12,000V, 3PH, 3W, 18kAIC
2	1	(N) 100A AC DISCONNECT 12,000V, 3PH, 3W, 18kAIC, FUSED W/ 100A FUSES
3	1	(N) 2,000KVA TRANSFORMER PRIMARY: 12,000V DELTA (3W), SECONDARY: 600V WYE (4W)
4	1	(N) 2000A AC DISCONNECT 600/347V, 3PH, 4W, FUSED W/ 2000A FUSES
5	1	(N) 2,000A SUB PANEL: 2,000A DISCONNECT SWITCH 600/347, 3PH, 4W
6a	1	(N)800A SUB PANEL: 700A MAIN BREAKER 600/347V, 3PH, 4W
6b	2	(N)800A SUB PANEL: 800A MAIN BREAKER 600/347V, 3PH, 4W
7	16	(N) CHINT POWER SYSTEMS CPS SCH100KTL-DO/US-600 600V, 3PH, 4W, 106.8A OUTPUT
8	56	(N) JUNCTION BOX
9	3100	(N)HANWHA Q CELL, Q. PEAK DUO XL-G10.2 485 RATED POWER: 485W V_{OC}:53.64V , I_{SC}:11.29A , V_{MP}: 45.07V , I_{MP}: 10.76A

SYSTEM DC STC NAME PLATE RATING
(3100) x (485W) = 1,503,500W

STRING MAX VOLTAGE
(20)Q CELL Q PEAK DUO XL-G10.2 485: 1142.317V
(18)Q CELL Q PEAK DUO XL-G10.2 485: 1028.086V

STRING MAX POWER POINT VOLTAGE
(20)Q CELL Q PEAK DUO XL-G10.2 485: 901.40V
(18)Q CELL Q PEAK DUO XL-G10.2 485: 811.26V

NOTE:
ALL PHOTOVOLTAIC OUTPUT CIRCUITS SHALL BE GUARDED OR INSTALLED IN A RACEWAY OR TYPE MC CABLE PER ARTICLE 690.31

NEWPORTPOWER
Delivering the Power of the Sun

NEWPORT POWER
205 AVENIDA DEL MAR #1384
SAN CLEMENTE, CA 92674
WWW.NEWPORTPOWER.COM
760-271-6580

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Newport Power
LIC # 939960
EXP: 11/30/2023

X James Reeve

HELLMAN PROPERTY

SITE ADDRESS
711 1ST STREET,
SEAL BEACH, CA 90740
APN: 095-010-68

No.	Description	Date

WIRE CHART

PV6

12/06/2022

1

WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

ORANGE WARNING AREA, 690.13(B)

2

WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

ORANGE WARNING AREA, 110.27(C)

3

WARNING

ELECTRICAL SHOCK HAZARD

DO NOT TOUCH TERMINALS TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

PHOTOVOLTAIC MODULES PRODUCE DC VOLTAGE WHENEVER THEY ARE EXPOSED TO SUNLIGHT

ORANGE WARNING AREA, 690.13(B)

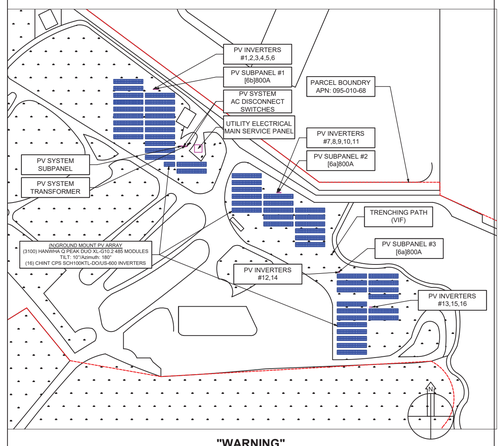
4

PHOTOVOLTAIC DC DISCONNECT

690.13(B)

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECT(S) LOCATED AS SHOWN. DANGEROUS VOLTAGE MAY BE PRESENT AT ALL TIMES.



"WARNING"
PHOTOVOLTAIC ARRAY
DISCONNECTION OF NEUTRAL OR GROUNDED CONDUCTORS MAY RESULT IN OVERVOLTAGE ON ARRAY OR INVERTER

6"X8" TYP - CEC 705.10

INVERTER # 1,2

5

PHOTOVOLTAIC SYSTEM
DC DISCONNECT

OPERATING VOLTAGE	901.40 VDC
OPERATING CURRENT	118.36 A
MAX SYSTEM VOLTAGE	1142.317 VDC
SHORT CIRCUIT CURRENT	124.19 A

690.13(B)

INVERTER # 7,12

5

PHOTOVOLTAIC SYSTEM
DC DISCONNECT

OPERATING VOLTAGE	901.40 VDC
OPERATING CURRENT	96.84 A
MAX SYSTEM VOLTAGE	1142.317 VDC
SHORT CIRCUIT CURRENT	101.61 A

690.13(B)

INVERTER # 3,9,10,14,15

5

PHOTOVOLTAIC SYSTEM
DC DISCONNECT

OPERATING VOLTAGE	811.26 VDC
OPERATING CURRENT	129.12 A
MAX SYSTEM VOLTAGE	1028.086 VDC
SHORT CIRCUIT CURRENT	135.48 A

690.13(B)

INVERTER # 8,13

5

PHOTOVOLTAIC SYSTEM
DC DISCONNECT

OPERATING VOLTAGE	901.40 VDC
OPERATING CURRENT	86.08 A
MAX SYSTEM VOLTAGE	1142.317 VDC
SHORT CIRCUIT CURRENT	90.32 A

690.13(B)

INVERTER # 4,5,6,16

5

PHOTOVOLTAIC SYSTEM
DC DISCONNECT

OPERATING VOLTAGE	811.26 VDC
OPERATING CURRENT	107.6 A
MAX SYSTEM VOLTAGE	1028.086 VDC
SHORT CIRCUIT CURRENT	112.9 A

690.13(B)

INVERTER # 11

5

PHOTOVOLTAIC SYSTEM
DC DISCONNECT

OPERATING VOLTAGE	901.40 VDC
OPERATING CURRENT	107.6 A
MAX SYSTEM VOLTAGE	1142.317 VDC
SHORT CIRCUIT CURRENT	112.9 A

690.13(B)

6

WARNING: PHOTOVOLTAIC POWER SOURCE

REFLECTIVE STICKER, 690.31(G)(3)(4)

7

WARNING

DUAL POWER SUPPLY

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

ORANGE WARNING AREA, 705.12(B)(2)(3)(b)

8

PHOTOVOLTAIC SYSTEM
AC DISCONNECT

RATED AC OUTPUT CURRENT	96.20 A
NOMINAL OPERATING AC VOLTAGE	600 V

690.13(B), 690.54

9

WARNING

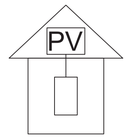
POWER SOURCE OUTPUT CONNECTION. DON NOT RELOCATE THIS OVERCURRENT DEVICE

ORANGE WARNING AREA, 705.12(B)(2)(3)(b)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

10

TURN RAPID SHUTDOWN SWITCH TO THE 'OFF' POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY



690.56(C)(1)(a)

11

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

REFLECTIVE STICKER, 690.56(C)(3)

12

PHOTOVOLTAIC SYSTEM
AC DISCONNECT

RATED AC OUTPUT CURRENT	1539.20 A
NOMINAL OPERATING AC VOLTAGE	600 V

690.13(B), 690.54

13

PHOTOVOLTAIC SYSTEM
AC DISCONNECT

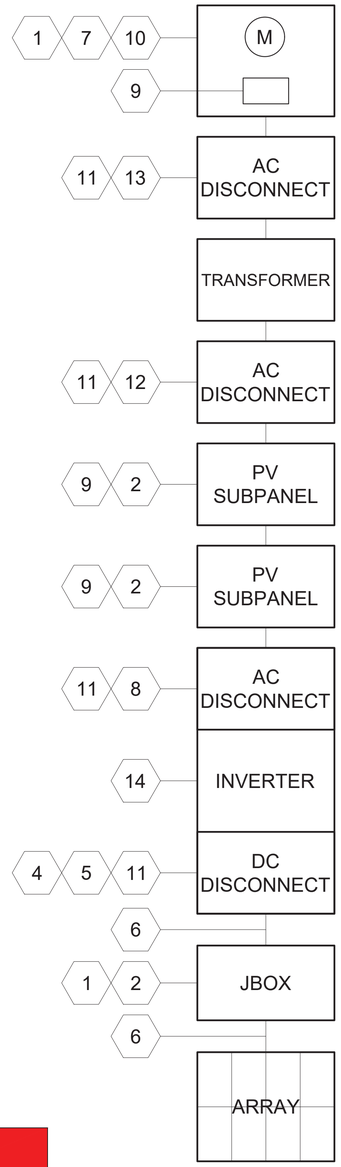
RATED AC OUTPUT CURRENT	76.96 A
NOMINAL OPERATING AC VOLTAGE	600 V

690.13(B), 690.54

14

INVERTER #1

INVERTER LABEL
INVERTERS #1-16



NOTES

1. ARTICLES 690 AND 705 MARKINGS SHOWN HEREON
2. ALL MARKINGS SHALL CONSIST OF THE FOLLOWING:
   A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING
   B. RED BACKGROUND COLOR WITH WHITE TEXT AND LINE WORK UON
   C. ARIAL FONT
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT USING PERMANENT ADHESIVE, POP-RIVETS, OR SCREWS

NEWPORTPOWER
Delivering the Power of the Sun

NEWPORT POWER
205 AVENIDA DEL MAR #1384
SAN CLEMENTE, CA 92674
WWW.NEWPORTPOWER.COM
760-271-6580

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Newport Power
LIC # 939960
EXP: 11/30/2023

X *James Reeve*

HELLMAN PROPERTY

SITE ADDRESS
711 1ST STREET,
SEAL BEACH, CA 90740
APN: 095-010-68

No.	Description	Date

SIGNAGE

PV7

12/06/2022



powered by Q.ANTUM DUO Z

Q.PEAK DUO XL-G10.2

470-495

ENDURING HIGH PERFORMANCE

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Yield Security

BREAKING THE 21.5% EFFICIENCY BARRIER
Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 21.6%.

LOW ELECTRICITY GENERATION COSTS
Higher yield per surface area, lower BOS costs and up to 80 watts more module power than standard 144 half-cell modules.

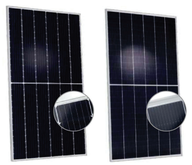
ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID Technology, Anti PID Technology[2], Hot-Spot Prctect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING
High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (3000 Pa).

A RELIABLE INVESTMENT
Inclusive 12-year product warranty and 25-year linear performance warranty[2].

STATE OF THE ART MODULE TECHNOLOGY
Q.ANTUM DUO combines cutting edge cell separation and innovative 12-busbar design with Q.ANTUM Technology.

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (−1500 V, 96 h)
[2] See data sheet on rear for further information.



6 BUSBAR CELL TECHNOLOGY

12 BUSBAR CELL TECHNOLOGY

THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	87.2 in × 41.1 in × 1.38 in (including frame) (2216 mm × 1045 mm × 35 mm)
Weight	58.4 lbs (26.5 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Anodized aluminum
Cell	6 × 26 monocrystalline Q.ANTUM solar half-cells
Junction Box	2.09–3.98 in × 1.26–2.36 in × 0.59–0.71 in (53–101 mm × 32–60 mm × 15–18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥ 27.6 in (700 mm), (−) ≥ 13.8 in (350 mm)[1]
Connector	Stäubli MC4; Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68

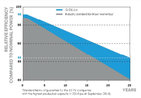
*Long cables (+) ≥ 57.1 in (1450 mm), (−) ≥ 57.1 in (1450 mm) for landscape installation are available upon request.

ELECTRICAL CHARACTERISTICS

POWER CLASS			470	475	480	485	490	495
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / −0 W)								
Minimum	Power at MPP	P_{MPP} [W]	470	475	480	485	490	495
	Short Circuit Current[1]	I_{SC} [A]	11.21	11.24	11.26	11.29	11.31	11.34
	Open Circuit Voltage[1]	V_{OC} [V]	53.54	53.58	53.61	53.64	53.68	53.71
	Current at MPP	I_{MPP} [A]	10.62	10.66	10.71	10.76	10.81	10.86
	Voltage at MPP	V_{MPP} [V]	44.27	44.54	44.81	45.07	45.33	45.59
	Efficiency[1]	η [%]	≥20.3	≥20.5	≥20.7	≥20.9	≥21.2	≥21.4
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP} [W]	352.6	356.4	360.1	363.9	367.6	371.4
	Short Circuit Current	I_{SC} [A]	9.03	9.05	9.07	9.09	9.12	9.14
	Open Circuit Voltage	V_{OC} [V]	50.49	50.53	50.56	50.59	50.62	50.65
	Current at MPP	I_{MPP} [A]	8.34	8.39	8.43	8.47	8.52	8.56
	Voltage at MPP	V_{MPP} [V]	42.26	42.49	42.72	42.94	43.17	43.39

[1] Measurement tolerances P_{MPP} ± 3%; I_{SC}; V_{OC} ± 5% at STC: 1000 W/m², 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • 800 W/m², NMOT, spectrum AM 1.5

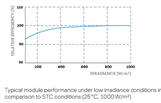
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS							
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	−0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	−0.34	Nominal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500 (IEC) / 1500 (UL)	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 1
Max. Design Load, Push / Pull[1]	[lbs/ft²]	75 (3600 Pa) / 42 (2000 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (−40 °C up to +85 °C)
Max. Test Load, Push / Pull[1]	[lbs/ft²]	113 (5400 Pa) / 63 (3000 Pa)			

[1] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells).

PACKAGING INFORMATION

Horizontal packaging	89.4 in 2270 mm	43.3 in 1100 mm	47.6 in 1210 mm	1809 lbs 821 kg	22 pallets	20 pallets	40 HC	29 modules

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

Specifications subject to technical changes © **Q CELLS** | Data Sheet DUO XL-G10.2_ATC-IAM_2022-01_Rev02_NA

CPS

Datasheet

100/125kW, 1500Vdc String Inverters for North America



CPS SCH100/125KTL-DO/US-600

The 100 & 125kW high power CPS three phase string inverters are designed for ground mount applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 99.1% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100/125kW products ship with the Standard or Centralized Wire-box, each fully integrated and separable with AC and DC disconnect switches. The Standard Wire-box includes touch safe fusing for up to 20 strings. The CPS FlexOM Gateway enables communication, controls and remote product upgrades.

Key Features

- NFPA 70, NEC 2014 and 2017 compliant
- Touch safe DC Fuse holders adds convenience and safety
- CPS FlexOM Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 1 MPPT with 20 fused inputs for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- Advanced Smart-Grid features (CA Rule 21 certified)
- kVA Headroom yields 100kW @ 0.9PF and 125kW @ 0.95PF
- Generous 1.87 and 1.5 DC/AC Inverter Load Ratios
- Separable wire-box design for fast service
- Standard 5 year warranty with extensions to 20 years



100/125KTL Standard Wire-box



100/125KTL Centralized Wire-box

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Chint Power Systems America
6800 Koll Center Parkway, Suite 235 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

CPS

Technical Data

Model Name	CPS SCH100KTL-DO/US-600	CPS SCH125KTL-DO/US-600
DC Input		
Max. PV Power	187.5kW	
Max. DC Input Voltage	1600V	
Operating DC Input Voltage Range	860-1450Vdc	
Start-up DC Input Voltage / Power	900V / 250W	
Number of MPP Trackers	1	
MPPT Voltage Range[1]	870-1300Vdc	
Max. PV Input Current (Isc x1.25)	275A	
Number of DC Inputs	20 PV source circuits, pos. & neg. fused (Standard Wire-box) 1 PV output circuit, 1-2 terminations per pole, non-fused (Centralized Wire-box)	
DC Disconnection Type	Load-rated DC switch	
DC Surge Protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)	
AC Output		
Rated AC Output Power	100kW	125kW
Max. AC Output Power[2]	100kVA (111KVA @ PF>0.9)	125kVA (132KVA @ PF>0.95)
Rated Output Voltage	600Vac	
Output Voltage Range[3]	528-660Vac	
Grid Connection Type[4]	3Φ / PE / N (Neutral optional)	
Max. AC Output Current @600Vac	96.2/106.8A	120.3/127.0A
Rated Output Frequency	60Hz	
Output Frequency Range[3]	57-63Hz	
Power Factor	>0.99 (±0.8 adjustable)	>0.99 (±0.8 adjustable)
Current THD	<3%	
Max. Fault Current Contribution (1-cycle RMS)	41.47A	
Max. OCPD Rating	200A	
AC Disconnection Type	Load-rated AC switch	
AC Surge Protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)	
System		
Topology	Transformerless	
Max. Efficiency	99.1%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	<4W	
Environment		
Enclosure Protection Degree	NEMA Type 4X	
Cooling Method	Variable speed cooling fans	
Operating Temperature Range	-22°F to +140°F / -30°C to +60°C (derating from +108°F / +42°C)	
Non Operating Temperature Range[5]	-40°F to +158°F / -40°C to +70°C maximum	
Operating Humidity	0-100%	
Operating Altitude	8202ft / 2500m (no derating)	
Audible Noise	<65dBA@1m and 25°C	
Display and Communication		
User Interface and Display	LED Indicators, WiFi + APP	
Inverter Monitoring	Modbus RS485	
Site Level Monitoring	CPS FlexOM Gateway (1 per 32 inverters)	
Modbus Data Mapping	SunSpec/CPS	
Remote Diagnostics / FW Upgrade Functions	Standard / (with FlexOM Gateway)	
Mechanical		
Dimensions (WxHxD)	45.28x24.25x9.84in (1150x616x250mm) with Standard Wire-box 39.37x24.25x9.84in (1000x616x250mm) with Centralized Wire-box	
Weight	Inverter: 121lbs / 55kg; Wire-box: 55lbs / 25kg (Standard Wire-box); 338s / 15kg (Centralized Wire-box)	
Mounting / Installation Angle	15 - 90 degrees from horizontal (vertical or angled)	
AC Termination	M10 Stud Type Terminal [3Φ] (Wire range:1/0AWG - 500kcmil CU/AL, Lugs not supplied) Screw Clamp Terminal Block [N] (#12 - 1/0AWG CU/AL)	
DC Termination	Screw Clamp Fuse Holder (Wire range: #12 - #6AWG CU) - Standard Wire-box Busbar, M10 Bolts (Wire range: #1AWG - 500kcmil CU/AL [1 termination per pole], #1AWG - 300kcmil CU/AL [2 terminations per pole], Lugs not supplied) - Centralized Wire-box	
Fused String Inputs	20A fuses provided (Fuse values up to 30A acceptable)	
Safety		
Safety and EMC Standard	UL1741-SA-2016, CSA-C22.2 NO.107.1-01, IEEE1547a-2014; FCC PART15	
Selectable Grid Standard	IEEE 1547a-2014, CA Rule 21, ISO-NE	
Smart-Grid Features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAr, Freq-Watt, Volt-Watt	
Warranty		
Standard[6]	5 years	
Extended Terms	10, 15 and 20 years	

1) See user manual for further information regarding MPPT Voltage Range when operating at non-unity PF
2) "Max. AC Apparent Power" rating varies upon MPPT voltage range and temperature range of -30°C to +40°C (-22°F to +104°F) for 100kW PF ≥0.9 and 125KW PF ≥0.95
3) "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
4) For neutral-grounded, Delta may not be corner-grounded.
5) See user manual for further requirements regarding non-operating conditions.
6) 5 year warranty effective for units purchased after October 1st, 2019.

SOLComponents
A CEMCO AFFILIATE

www.solcomponents.com

GROUND FIXED-TILT SOLUTION



SOL Components is a premier steel provider to the Solar PV Industry. Our class-leading products are produced with domestic material in 9 factories located throughout the United States. With production capacity in excess of 1,000 tons of steel per day, we satisfy commercial and utility scale project requirements with tight delivery timelines.

FLEXIBLE DESIGN
Configurable to cover all design requirements - from variable module string lengths to 170 mph winds.

BUILDS FAST
Lowest part and fastener count for ease-of-assembly and speedy construction. Forgiving installation tolerances to keep you building.

ESTABLISHED SUPPLY CHAIN
9 manufacturing facilities across the country and dedicated logistic support. Our well-oiled machine delivers on time.

INDUSTRY PROVEN
With over 1GW deployed, the SOL Components GFT system is the market leader in domestic fixed-tilt installations.

STRUCTURAL SOLAR SOLUTIONS

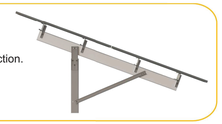
1775 Tribute Rd. Suite A
Sacramento, CA 95815
855.278.3444

SOLComponents
A CEMCO AFFILIATE

www.solcomponents.com

STANDARD CONFIGURATION

- Intuitive and low-cost design using standard profiles.
- Fewest components and fasteners for speedy construction.
- Generous vertical, N/S, and E/W adjustability.
- Integrated wire-management.



MAX-LOAD CONFIGURATION

- Dual-support design for maximum wind and snow loads.
- High-strength and lightweight materials.
- Ideal for hurricane and heavy snow environments.



SHARED-RAIL CONFIGURATION

- 3-purlin design with shared clamping.
- Ergonomic stainless steel mid-clamp assemblies.
- 25% reduction in module mounting bolts.
- Up to 2,000 man-hours saved per 100MW.



STRUCTURAL AND MECHANICAL SPECIFICATIONS	
Inclination Range	5-35 Degrees
Foundations	Roll-Formed C or W-Section Piles
Modules Supported	All Standard Framed and First Solar Series 6
Module Orientation	2-Portrait
Module Attachment	Direct-Bolt to Purlin Standard, Clamp Configurable
Structure Material	ASTM A653 Grade 50 Steel
Hardware	Galvanized and Stainless Serrated Flange, No Washers
Corrosion Protection	G90-G360 Pre-galvanized and Hot-Dip Galvanized
Grade Change	20% Continuous E/W
Max Wind Speed	Any
Max Snow Load	Any
Wind Tunnel Testing	CPP Third Party Testing Laboratory
Bonding and Grounding	Intertek Listed UL2703, No Bonding Plates or Star Washers
Warranty	20 Years Standard, Extensions Available

STRUCTURAL SOLAR SOLUTIONS

1775 Tribute Rd. Suite A
Sacramento, CA 95815
855.278.3444

NEWPORTPOWER
Delivering the Power of the Sun

NEWPORT POWER
205 AVENIDA DEL MAR #1384
SAN CLEMENTE, CA 92674
WWW.NEWPORTPOWER.COM
760-271-6580

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Newport Power
LIC # 939960
EXP: 11/30/2023

X James Reeve

HELLMAN PROPERTY

SITE ADDRESS
711 1ST STREET,
SEAL BEACH, CA 90740
APN: 095-010-68

No.	Description	Date

DATA SHEETS

PV8

12/06/2022

SOL COMPONENTS
GROUND FIXED-TILT PHOTOVOLTAIC SUPPORT SYSTEM

GENERAL NOTES

1. ALL CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE GOVERNING CODE - SEE "CODE INFORMATION".
2. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AT JOB SITE BEFORE STARTING WORK. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER PRIOR TO COMMENCEMENT OF WORK.
3. CONNECTIONS AND IMPLIED CONSTRUCTION ASSEMBLIES THAT ARE NOT SPECIFICALLY DESCRIBED OR DETAILED SHALL BE CONSTRUCTED USING STANDARD CONSTRUCTION PRACTICES IN COMPLIANCE WITH GOVERNING CODES AND ORDINANCES.
4. WRITTEN INFORMATION AND DIMENSIONS SHALL TAKE PRECEDENCE OVER GRAPHIC INFORMATION. DO NOT SCALE DRAWINGS. RESOLVE ANY CONFLICTS ON THE PLANS WITH ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION.
5. WHEN DETAILS LABELED "TYPICAL" OR "SIMILAR" ARE GIVEN ON DRAWINGS, THE CONTRACTOR SHALL APPLY THE INTENT OF THE DETAIL TO THAT SPECIFIC CONDITION.
6. THE CONTRACTOR SHALL PROVIDE ADEQUATE AND PROPER SHORING AND BRACING TO MAINTAIN SAFE CONDITIONS AT ALL TIMES UNTIL STRUCTURAL ELEMENTS ARE PERMANENTLY ATTACHED. DRAWINGS INDICATE STRUCTURE IN FINAL FORM CAPABLE OF SUPPORTING DESIGN LOADINGS.
7. SOL COMPONENTS SHALL BE IMMEDIATELY NOTIFIED OF ANY MATERIAL WHICH ARRIVES DAMAGED OR OUT OF SPECIFICATION.
8. FOUNDATION DESIGN IS BASED OFF OF CUSTOMER SUPPLIED GEOTECHNICAL REPORTS, PULL TEST DATA, AND/OR SOILS INFORMATION AVAILABLE THROUGH THE NATURAL RESOURCES CONSERVATION SERVICE. NATURAL VARIATIONS IN GROUND CONDITIONS WILL OCCUR BETWEEN EXPLORATION POINT LOCATIONS OR DUE TO THE MODIFYING EFFECTS OF CONSTRUCTION OR WEATHER AND CAN RESULT IN PILE REFUSAL. THE NATURE AND EXTENT OF SUCH VARIATIONS MAY NOT BECOME EVIDENT UNTIL DURING OR AFTER CONSTRUCTION. SOL COMPONENTS IS NOT LIABLE FOR PILE REFUSAL AND HAS PROVIDED A DRIVEN PILE REFUSAL MITIGATION GUIDELINES DOCUMENT TO AID ON FIELD REMEDIATION.
9. FIELD DRILLED HOLES SHALL BE SPACED NOT LESS THAN 3X DIA. FOR HOLE TO HOLE SPACING OR 1.5X DIA. HOLE TO EDGE SPACING. BRACES AND PURLINS MAY BE ADJUSTED ONCE WITHOUT REMEDIATION SO LONG AS THE AFOREMENTIONED HOLE SPACING REQUIREMENTS ARE MET. ANY ADDITIONAL FIELD ADJUSTMENTS SHALL BE SUBMITTED TO SOL COMPONENTS FOR REVIEW.

STRUCTURAL SPECIFICATION

1. STEEL GRADES:
   C SHAPES, L SHAPES & PLATES_____ A1003 GRADE AS NOTED BELOW
   MACHINE BOLTS (MB)_____SAE J429 GRADE 5 OR 304SH STAINLESS STEEL
   NUTS _____SAE J995 GRADE 5 OR 304SH STAINLESS STEEL
2. ALL BOLTS GREATER THAN 1/2" DIAMETER SHALL BE HIGH STRENGTH BOLTS, UNO.
3. BOLT HOLES SHALL BE 1/16" LARGER IN DIAMETER THAN THE BOLT FOR BOLTS 1/2" DIAMETER OR GREATER. BOLT HOLES SHALL BE 1/32" LARGER IN DIAMETER THAN THE BOLT FOR BOLTS LESS THAN 1/2" DIAMETER.
4. SELF-DRILLING SCREWS SHALL BE ELCO EDB741 PER ICC-ES ESR-3294

COLD-FORMED STEEL MATERIALS AND INSTALLATION

1. ITEMS SPECIFIED AS COLD-FORMED STEEL FRAMING SHALL BE DESIGNED, DETAILED AND FABRICATED IN ACCORDANCE WITH A.I.S.I. SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS, 2012 EDITION.
2. COLD-FORMED MEMBER SIZES ARE GIVEN IN MILS TO REFLECT THE CURRENT INDUSTRY TREND. FOR INFORMATIONAL PURPOSES, EQUIVALENT GAGE SIZES ARE GIVEN AS FOLLOWS.
   20 GAGE = 33 MIL 14 GAGE = 68 MIL
   18 GAGE = 43 MIL 12 GAGE = 97 MIL
   16 GAGE = 54 MIL 10 GAGE = 118 MIL
3. COLD-FORMED STEEL MEMBERS SHALL BE OF THE TYPE AND SIZE AS SHOWN ON THE DRAWINGS AND SPECIFICATIONS.
4. ALL 118, 97, 68, AND 54 MIL ITEMS SHALL BE FORMED FROM STEEL MEETING THE MINIMUM REQUIREMENTS OF ASTM A-1003 ST GRADE 50H.
5. COLD-FORMED STEEL MEMBERS, SHALL BE GALVANIZED G90 COATING UNLESS NOTED OTHERWISE. FOUNDATIONS SHALL BE GALVANIZED G210 COATING MINIMUM.
6. CUTTING, NOTCHING OR BORING OF STEEL FLANGES SHALL NOT BE PERMITTED UNLESS OTHERWISE NOTED.
7. LIGHT GAUGE COLD FORMED STEEL INCLUDES SHEARED EDGES WHICH ARE UNCOATED AND WILL SHOW SACRIFICIAL CORROSION. THE EXPOSURE OF THE UNDERLYING STEEL CAUSED BY COATING DAMAGE OR A CUT EDGE WILL NOT RESULT IN CORROSION OF THE STEEL AND THUS WILL NOT AFFECT THE PERFORMANCE OF THE COATING OR THE STEEL STRUCTURE.
8. ALL PLIES OF METAL SHALL BE FULLY SEATED AND FLUSH, AND FASTENERS COMPLETELY ENGAGED

HOT-FORMED STEEL MATERIALS

1. HOT-FORMED FOUNDATIONS SHALL BE ASTM A992 GR. 50.
2. HOT-FORMED FOUNDATIONS SHALL BE HOT-DIP GALVANIZED ASTM A123.

CODE INFORMATION

GOVERNING CODES, STANDARDS AND SPECIFICATIONS:
D) 2019 CALIFORNIA BUILDING CODE
E) ASCE STANDARD [ASCE/SEI 7-16], MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
F) AISI S100 "SPECIFICATIONS FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS", 2016 EDITION.

DESIGN CRITERIA

DESIGN DEAD LOADS:	
MODEL/FRAME	2.30 PSF

WIND DESIGN CRITERIA:	
WIND SPEED	115 MPH
RISK CATEGORY	I
WIND EXPOSURE FACTOR	C

SNOW DESIGN CRITERIA:	
GROUND SNOW LOAD	0 PSF
RISK CATEGORY	I

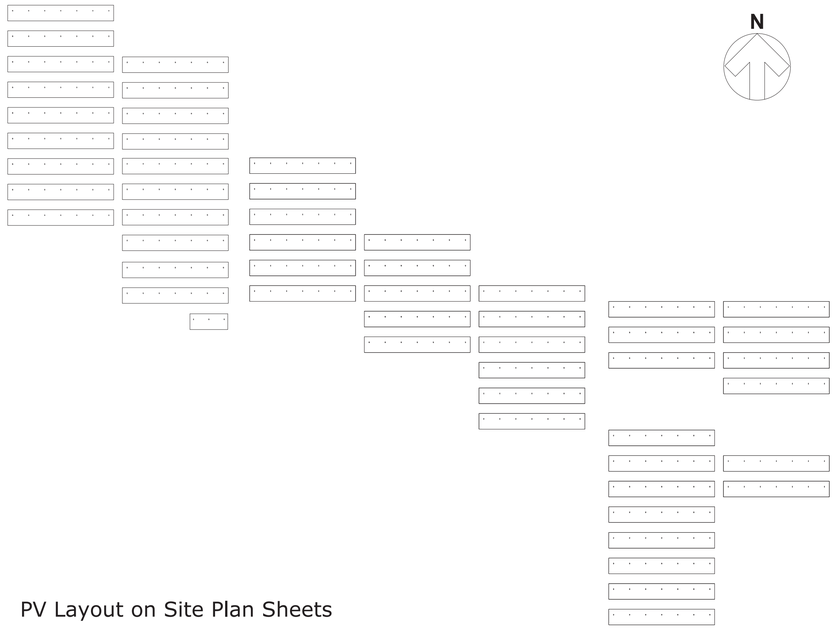
SEISMIC DESIGN CRITERIA:	
RISK CATEGORY	I
S_S	1.563g
S_1	0.585g
S_{DS}	1.042g
S_{D1}	0.585g
SITE CLASS	D
SEISMIC DESIGN CATEGORY	D

FOUNDATION DESIGN:
PER GEOTECHNICAL REPORT # IR18166880
CONDUCTED BY WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS INC. ON 7-9-2018

PROJECT SUMMARY

MODULE TYPE	Q.PEAK DUO XL-G10.d 485W
DESIGN MODULE E/W GAP	3/8"
MODULE DIMENSIONS	2216mm x 1045mm x 35mm
PROJECT SIZE	1.5 MW DC
MODULE COUNT	3,100
TABLE SIZES	2x28 & 2x10
TILT ANGLE	10 DEGREES
ASIMUTH ANGLE	180 DEGREES
NOMINAL PILE REVEAL	SEE 8/SC4.0
GROUND CLEARANCE	18 IN.
FASTENER TORQUE [AS APPLICABLE]	60±6 FT.-LBS. [1/2"-13] 13±1 FT.-LBS. [5/16"-18] 10±1 FT.-LBS. [1/4"-20]

NOTE:
THE PHOTO VOLTAIC (PV) MODEL SUPPORT DESIGN ONLY APPLIES IF THE FOLLOWING CODES AND SPECIFICATIONS, DEAD LOADS, WIND LOAD CRITERIA AND SOIL MATERIAL CLASS LISTED UNDER THE DESIGN CRITERIA ARE MET. THE MODEL SUPPORT DESIGN SYSTEM SHALL NOT BE USED IN AREAS THAT DO NOT MEET THESE DESIGN CRITERIA.



PV Layout on Site Plan Sheets

SPECIAL INSPECTION REQUIREMENTS:

2019 CBC TABLE 1705A.6
REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	-	X
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	-	X
3. PERFORM CLASSIFICATION & TESTING OF COMPACTED FILL MATERIALS.	-	X
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	-
5. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	-	X

2019 CBC TABLE 1705A.7
REQUIRED SPECIAL INSPECTIONS AND TESTS OF DRIVEN DEEP FOUNDATION ELEMENTS

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. VERIFY ELEMENT MATERIALS, SIZES, AND LENGTHS COMPLY WITH THE REQUIREMENTS.	X	-
2. DETERMINE CAPACITIES OF TEST ELEMENTS AND CONDUCT ADDITIONAL LOAD TESTS, AS REQUIRED.	X	-
3. INSPECT DRIVING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT.	X	-
4. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM TYPE AND SIZE OF HAMMER, RECORD NUMBER OF BLOWS PER FOOT OF PENETRATION, DETERMINE REQUIRED PENETRATIONS TO ACHIEVE DESIGN CAPACITY, RECORD TIP AND BUTT ELEVATIONS AND DOCUMENT ANY DAMAGE TO FOUNDATION ELEMENT.	X	-
5. FOR STEEL ELEMENTS, PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705.2.	-	-
6. FOR CONCRETE ELEMENTS AND CONCRETE-FILLED ELEMENTS, PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705.3.	-	-
7. FOR SPECIALTY ELEMENTS, PERFORM ADDITIONAL INSPECTIONS AS DETERMINED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.	-	-

SYSTEM TOLERANCES

PILE:	• ± 1" MAX VERTICAL TOLERANCE BETWEEN PILES • ± 2 DEGREES PLUMB NORTH-SOUTH & EAST-WEST • ± 1" EAST-WEST SPACING • ± 1" NORTH-SOUTH SPACING • ± 6 DEGREES TWIST/YAW • SEE SC 4.0 FOR MAXIMUM PILE REVEAL
SYSTEM TILT:	• ± 1 DEGREES STRUCTURALLY ACCEPTABLE • ± 0.25° RECOMMENDED FOR AESTHETICS
TABLE GAP:	• NOMINAL DESIGN +1", 2" MINIMUM
FAULTING:	• ± 2" VERTICAL TABLE GAP
PURLIN CANTILEVER :	• ± 3"

SHEET INDEX

COVER SHEET.....SC 0.0
BILL OF MATERIALS.....SC 1.0
SITE ARRAY LAYOUT.....SC 2.0
TABLE-TO-TABLE PILE SPACING.....SC 2.1
2x28 TABLE DETAILS.....SC 3.0
2x10 TABLE DETAILS.....SC 3.1
TYPICAL DETAILS.....SC 4.0
TRENCH CLEARANCE TO PILE DETAIL.....SC 4.1

REVISION	DATE	DESCRIPTION

CLIENT:

NEWPORT POWER

SOLComponents

1775 TRIBUTE ROAD, STE A.
SACRAMENTO, CA 95815

IFP SUBMITTAL



PROJECT:

1.5 MW
HELLMAN SOLAR

SITE LOCATION:

SEAL BEACH, CA
33.755, -118.096

DO NOT SCALE FROM DRAWING

UNLESS OTHERWISE NOTED

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DRAWN BY: / DATE:
DJ 02/28/22

CHECKED BY: / DATE:
JEJA 03/07/22

SCALE:
As Noted

PROJECT NO.:
SC22-001

SHEET NO.:
COVER SHEET

SC 0.0

Full BOM Details

Description	Part Number	Revision	Part Length (in.)	Part Weight (lbs.)	2x28 Table	2x10 Table	Total Nominal Qty.
Pile, SC22-001 Hellman Solar, C6x3.0, 10GA, 10 Deg, 89 in Length	FND-0201-89	A	89.00	40.27	385	3	388
Top Chord, Q.PEAK DUO XL-G10.d, C8x2.0, 14GA, Grade 50, G235	TCH-0060	A	143.12	36.85	385	3	388
Purlin, Q.PEAK DUO XL-G10.d, C6.0 x 2.0, 0.625 Return, 16GA, Grade 50, 10 Module, G235	PUR-0161	A	414.79	72.24	440	4	444
Purlin, Q.PEAK DUO XL-G10.d, C6.0 x 2.0, 0.625 Return, 16GA, Grade 50, 8 Module, G235	PUR-0162	A	331.76	57.78	220	0	220
Angle Brace, SDS, L2.5x2.5, 12GA, Commercial Inventory	ANG-0022-60	A	60.00	8.19	385	3	388
Riser, T5x2.0, 12GA	ACC-0041	B	18.50	4.56	385	3	388
Purlin Bracket, SDS, 12GA, No Tab G235	ACC-0105	A	11.25	1.14	1,540	12	1,552
Purlin Splice, L6x2.0, 12GA	ACC-0053	B	6.00	1.45	440	0	440
Table Splice	ACC-0005	C	15.00	0.09	-	-	56
Serrated Hex Flange Bolt, Grade 5, HDG, 1/2-13 Thread, 1 in Length	FAS-0001-HDG	A	-	-	6,765	39	6,804
Serrated Hex Flange Nut, Grade 5, HDG, Blue Wax, 1/2-13 Thread	FAS-0002-HDG	A	-	-	6,765	39	6,804
Hex Head Self-Drilling Screw, #12, #3 Tip, 1000 Hour Salt Spray, 3/4 in Length	FAS-0009-ZNC	A	-	-	6,160	48	6,208
Serrated Hex Flange Bolt, 304 SST, 5/16-18 Thread, 5/8 in Length	FAS-0005-SST	A	-	-	12,320	80	12,512
Serrated Hex Flange Nut, 304 SST, 5/16-18 Thread	FAS-0006-SST	A	-	-	12,320	80	12,512
Purlin Squaring Appliance, Q.PEAK DUO XL-G10.d	ACC-0151	A	-	-	-	-	2

1 BILL OF MATERIALS

SCALE: N.T.S.

REVISION	DATE	DESCRIPTION

CLIENT:

NEWPORT POWER

SOLComponents

1775 TRIBUTE ROAD, STE A.
SACRAMENTO, CA 95815

IFP SUBMITTAL

DJ STEVENS C 74521 EXP. 12.31.22 CIVIL STATE OF CALIFORNIA
04/28/2022

PROJECT:

1.5 MW
HELLMAN SOLAR

SITE LOCATION:

SEAL BEACH, CA
33.755, -118.096

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PROJECT NO.: SC22-001

SHEET NO.: BILL OF MATERIALS

SC 1.0

RACKING PILE COUNT	388

TABLE TYPE	TABLE QTY.	LEGEND (N.T.S.)
2x28 TABLE, TYP.	55	
2x10 TABLE, TYP.	1	

PV Layout on Site Plan Sheets

ARRAY #1

ARRAY #2

ARRAY #3

8'-0" [2438mm]
E-W ARRAY SPACING, TYP.

9'-0" [2743mm]
N-S ARRAY SPACING, TYP.

N

1 SITE ARRAY LAYOUT

SCALE: N.T.S.

REVISION	DATE	DESCRIPTION

CLIENT:

NEWPORT POWER

SOLComponents

1775 TRIBUTE ROAD, STE A.
SACRAMENTO, CA 95815

IFP SUBMITTAL

DJ ENERGY J. JAMES C 74521 EXP. 12.31.22 CIVIL STATE OF CALIFORNIA 04/28/2022

PROJECT:

1.5 MW
HELLMAN SOLAR

SITE LOCATION:

SEAL BEACH, CA
33.755, -118.096

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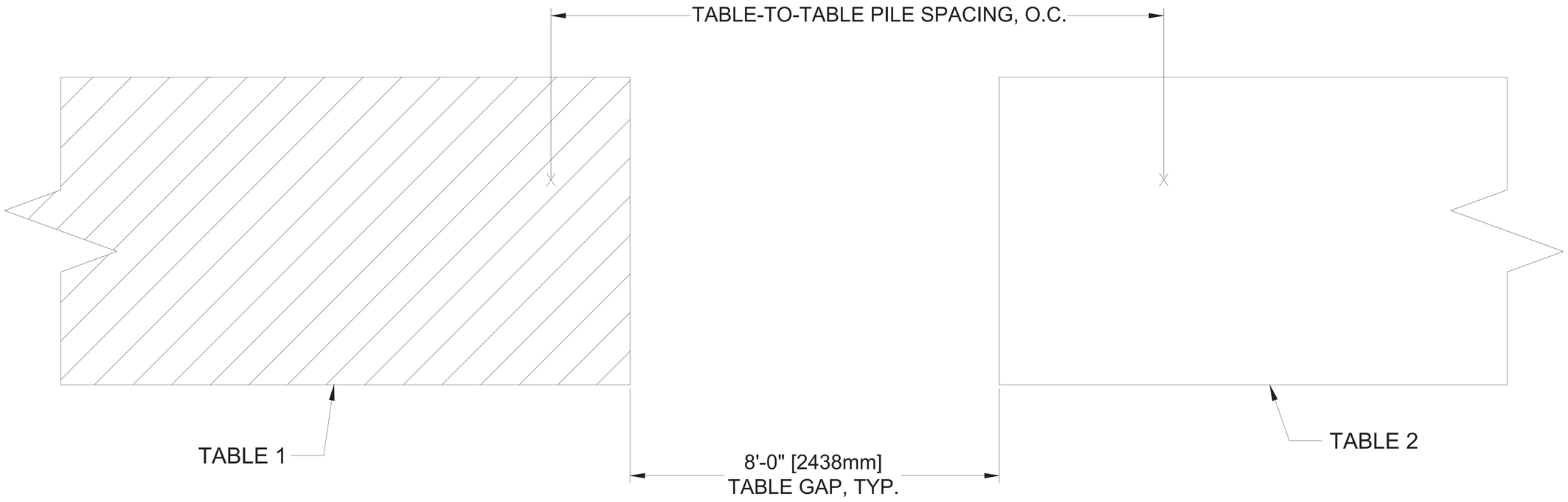
PROJECT NO.:
SC22-001

SHEET NO.:
SITE ARRAY LAYOUT

SC 2.0

TABLE 1	TABLE 2	TYP. TABLE-TO-TABLE PILE SPACING
2X28 TABLE	2X28 TABLE	16'-4 $\frac{1}{8}$" [4981mm]
2X10 TABLE	2X28 TABLE	15'-5 $\frac{7}{16}$" [4710mm]

NOTES:
1. PILE SPACING VALUES IDENTICAL FOR INVERTED TABLE 1 & 2 DESIGNATION.
2. AISLE REFERS TO EITHER LEFT OR RIGHT AISLE TABLES.
3. ONLY APPLIES FOR TABLES IN CONTINUOUS ROW WITH SPECIFIED TABLE GAP.



1 TABLE-TO-TABLE PILE SPACING

SCALE: N.T.S.

REVISION	DATE	DESCRIPTION

CLIENT:

NEWPORT POWER

SOLComponents

1775 TRIBUTE ROAD, STE A.
SACRAMENTO, CA 95815

IFP SUBMITTAL

PROJECT:

1.5 MW
HELLMAN SOLAR

SITE LOCATION:

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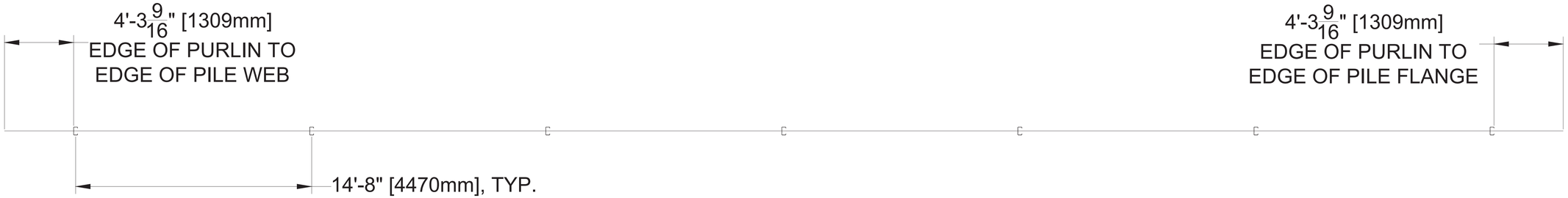
PROJECT NO.: SC22-001

SHEET NO.:

TABLE-TO-TABLE PILE SPACING

SC 2.1

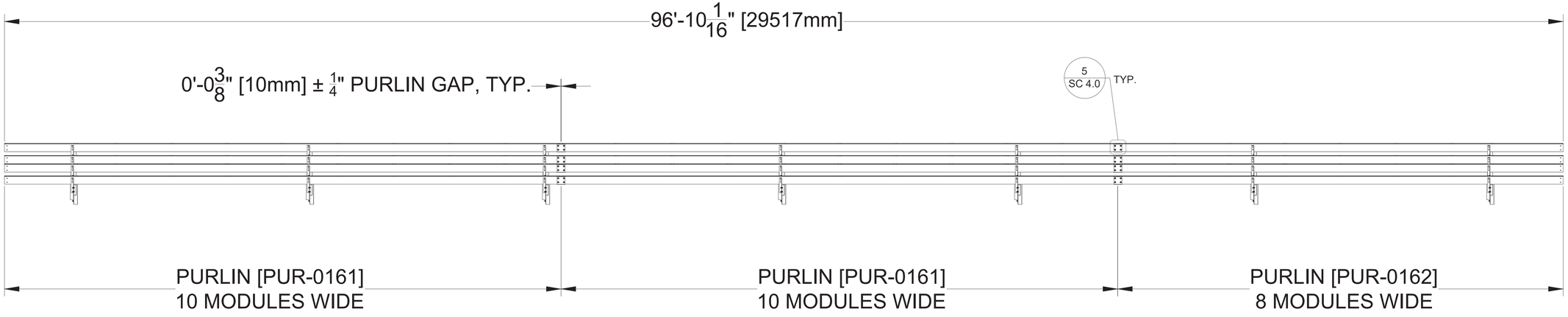
PILE QTY. PER TABLE	7
MIN. PILE EMBEDMENT	6'-0"



1 2x28 TABLE PILE SPACING

SCALE: N.T.S.

PURLIN	QTY. PER TABLE
PURLIN [PUR-0161]	8
PURLIN [PUR-0162]	4



2 2x28 TABLE PURLIN SPACING

SCALE: N.T.S.

REVISION	DATE	DESCRIPTION

CLIENT:

NEWPORT POWER

SOLComponents

1775 TRIBUTE ROAD, STE A.
SACRAMENTO, CA 95815

IFP SUBMITTAL

DANIEL J. JAMES C 74521 EXP. 12.31.23 CIVIL STATE OF CALIFORNIA 04/28/2022

PROJECT:

1.5 MW
HELLMAN SOLAR

SITE LOCATION:

SEAL BEACH, CA
33.755, -118.096

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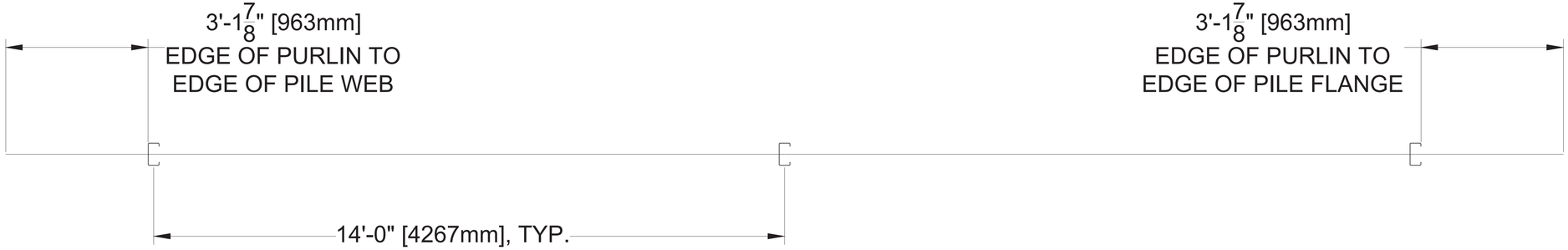
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SCALE:	As Noted
PROJECT NO.:	SC22-001
SHEET NO.:	2x28 TABLE

SC 3.0

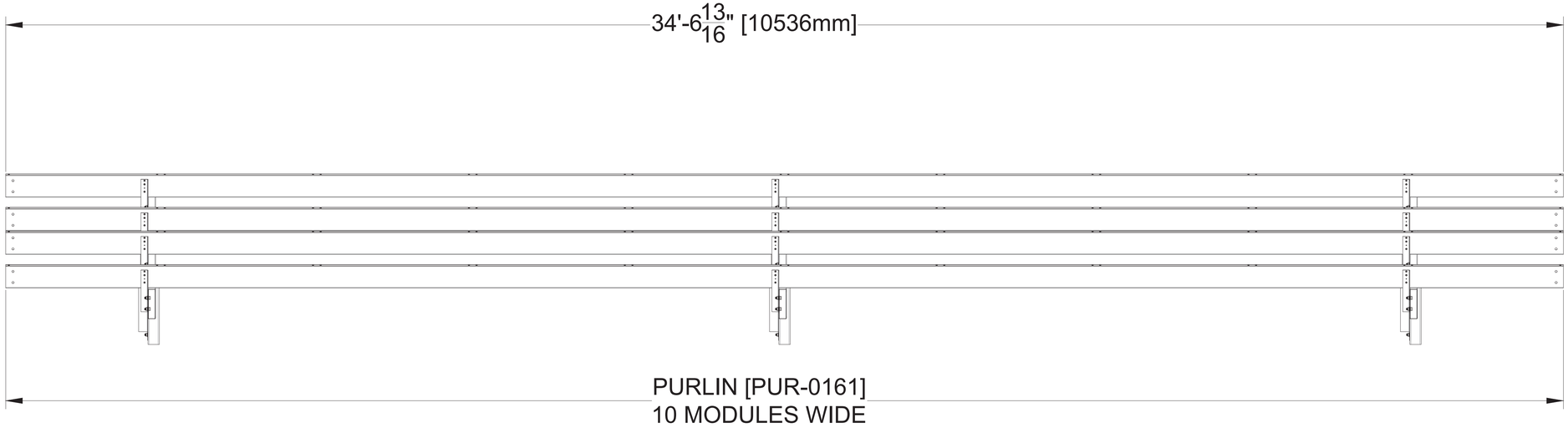
PILE QTY. PER TABLE	3
MIN. PILE EMBEDMENT	6'-0"



1 2x10 TABLE PILE SPACING

SCALE: N.T.S.

PURLIN	QTY. PER TABLE
PURLIN [PUR-1061]	4



2 2x10 TABLE PURLIN SPACING

SCALE: N.T.S.

REVISION	DATE	DESCRIPTION

CLIENT:

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1775 TRIBUTE ROAD, STE A.
SACRAMENTO, CA 95815

IFP SUBMITTAL



PROJECT:

1.5 MW
HELLMAN SOLAR

SITE LOCATION:

SEAL BEACH, CA
33.755, -118.096

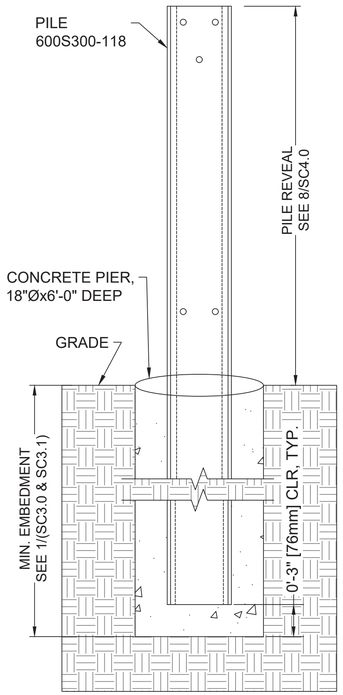
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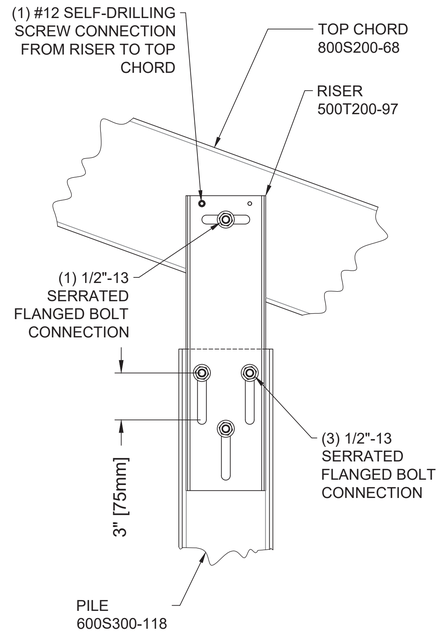
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JEJA	03/07/22
SCALE:	As Noted
PROJECT NO.:	SC22-001
SHEET NO.:	2x10 TABLE

SC 3.1



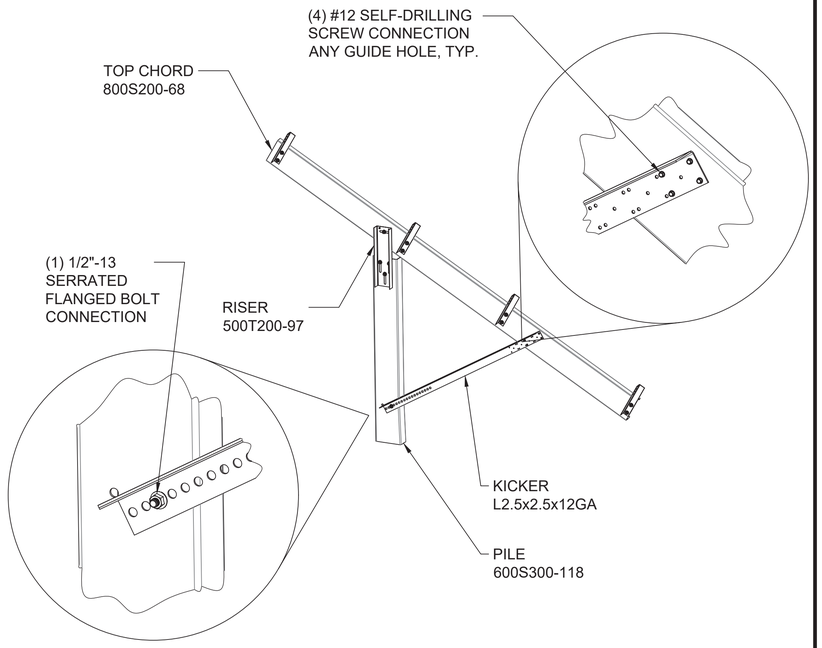
1 PILE FOUNDATION

SCALE: N.T.S.



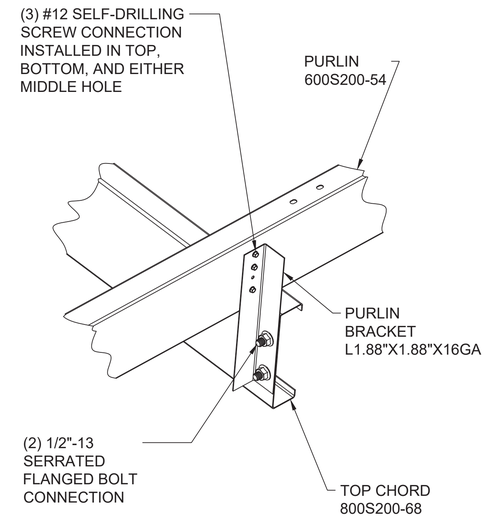
2 TOP CHORD TO PILE CONNECTION

SCALE: N.T.S.



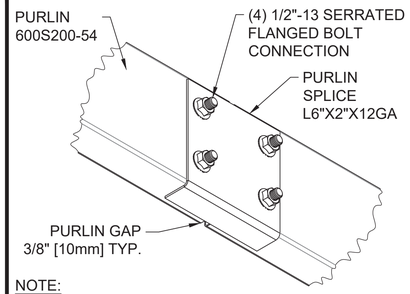
3 ANGLE BRACE TO PILE AND TOP CHORD CONNECTIONS

SCALE: N.T.S.



4 PURLIN TO TOP CHORD CONNECTION

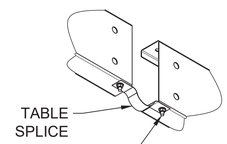
SCALE: N.T.S.



NOTE:
1/8" NOMINAL PURLIN
AND SPLICE FLANGE GAP

5 PURLIN SPLICE CONNECTION

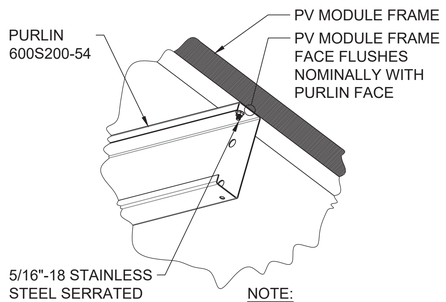
SCALE: N.T.S.



NOTE:
ONE TABLE SPLICE PER
TABLE GAP REQUIRED

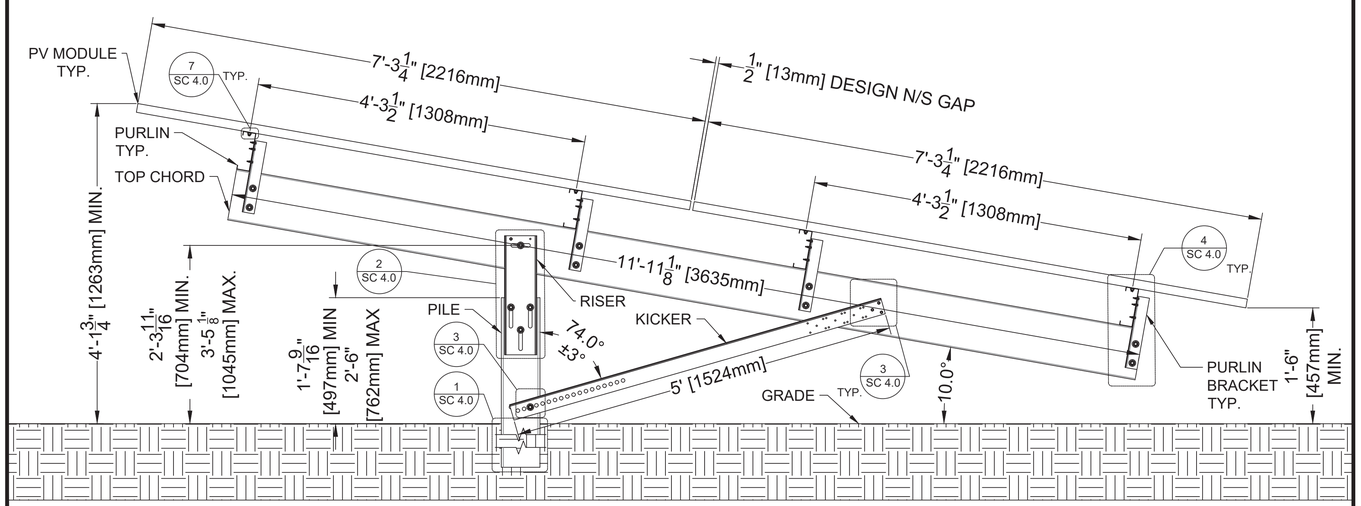
6 TABLE SPLICE CONNECTION

SCALE: N.T.S.



7 PV MODULE TO PURLIN CONN.

SCALE: N.T.S.



8 FRAMING SECTION - TWO ROWS OF MODULES IN PORTRAIT ORIENTATION

SCALE: N.T.S.

REVISION	DATE	DESCRIPTION

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NEWPORT POWER

SOLComponents

1775 TRIBUTE ROAD, STE A.
SACRAMENTO, CA 95815

IFP SUBMITTAL

DANIEL J. JANG
C 74521
EXP. 12.31.23
CIVIL
STATE OF CALIFORNIA
04/28/2022

PROJECT:

1.5 MW
HELLMAN SOLAR

SITE LOCATION:

SEAL BEACH, CA
33.755, -118.096

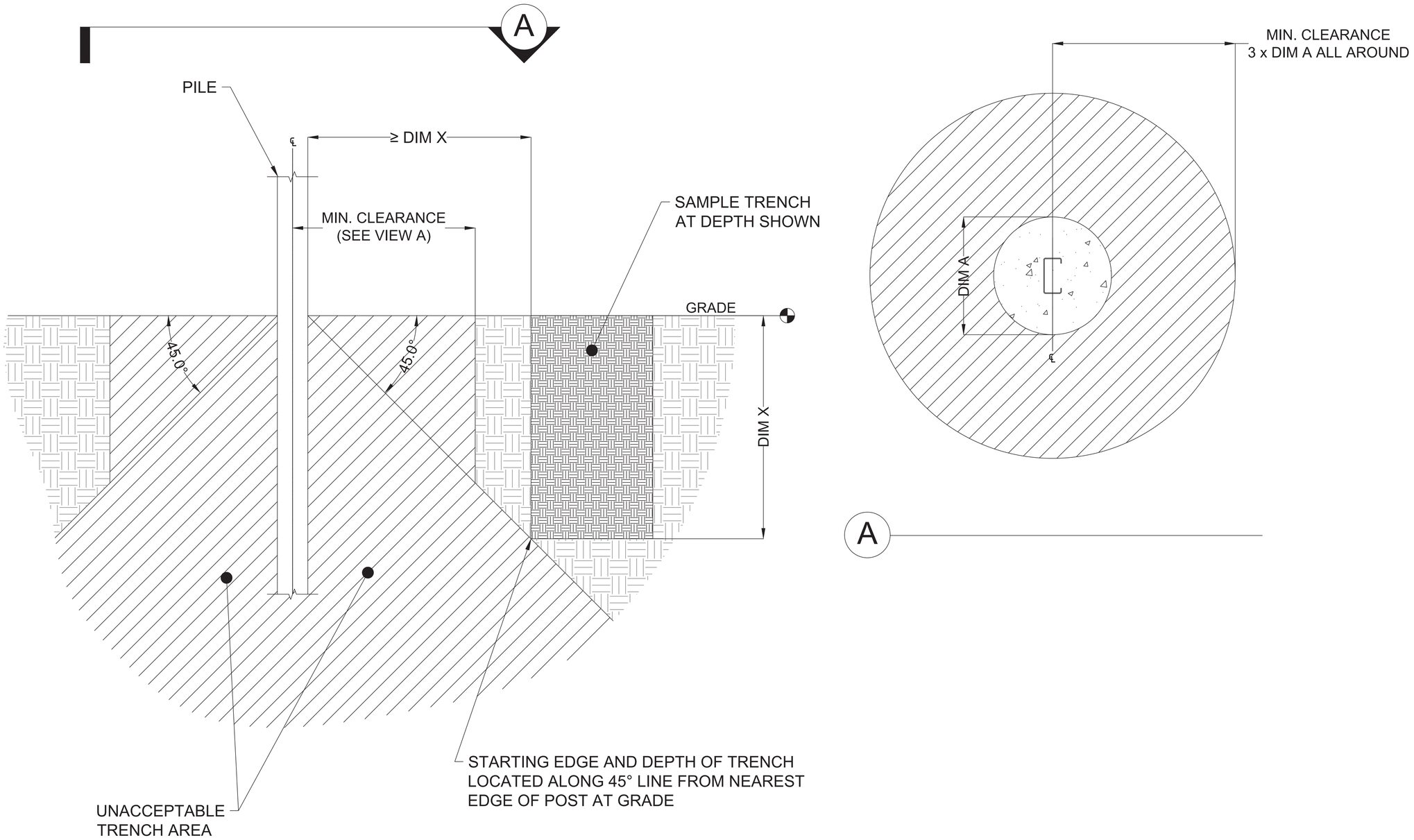
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PROJECT NO.:	SC22-001
SHEET NO.:	TYPICAL DETAILS

SC 4.0



1 MINIMUM TRENCH TO PILE CLEARANCE REQUIREMENTS

SCALE: N.T.S.

REVISION	DATE	DESCRIPTION

CLIENT:

NEWPORT POWER

SOLComponents

1775 TRIBUTE ROAD, STE A.
SACRAMENTO, CA 95815

IFP SUBMITTAL

DJ ENGINEERING C 74521 EXP. 12.31.23 CIVIL STATE OF CALIFORNIA
04/28/2022

PROJECT:

1.5 MW
HELLMAN SOLAR

SITE LOCATION:

SEAL BEACH, CA
33.755, -118.096

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SCALE: As Noted

PROJECT NO.: SC22-001

SHEET NO.:

TRENCH CLEARANCE TO PILE DETAIL

SC 4.1


CONSTRUCTION WORK ZONES
SOIL POTENTIALLY IMPACTED
ROUGHLY 20' AROUND EACH
FUTURE ARRAY
TRENCHING PATH
SOIL POTENTIALLY IMPACTED
ROUGHLY 10' ON EITHER
SIDE OF TRENCH PATH
CONSTRUCTION WORK ZONES
SOIL POTENTIALLY IMPACTED
ROUGHLY 20' AROUND EACH
FUTURE ARRAY
TRENCHING PATH
SOIL POTENTIALLY IMPACTED
ROUGHLY 10' ON EITHER
SIDE OF TRENCH PATH
STAGING AREA
BUFFER ZONE
ARCHAEOLOGICAL ZONE
CONSTRUCTION WORK ZONES
SOIL POTENTIALLY IMPACTED
ROUGHLY 20' AROUND EACH
FUTURE ARRAY

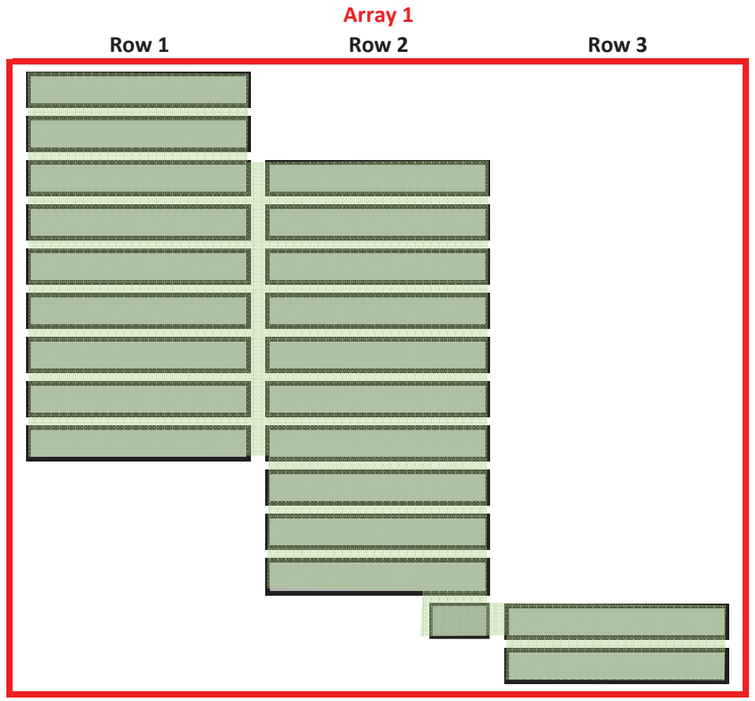
Appendix C

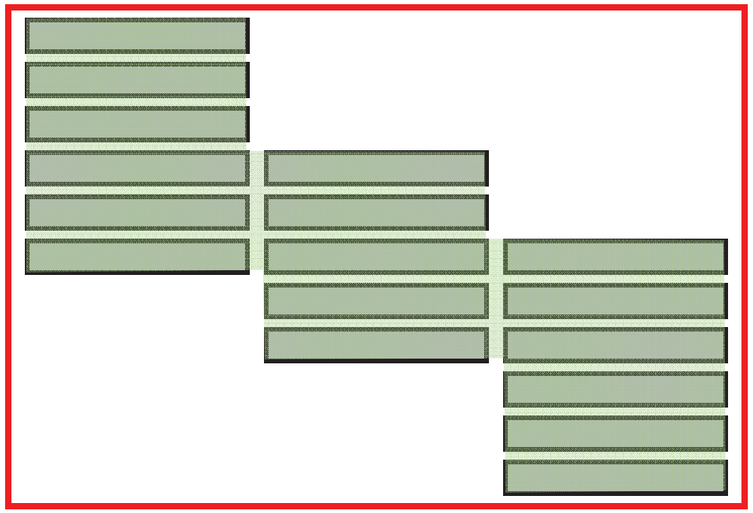
Miscellaneous Support Calculations

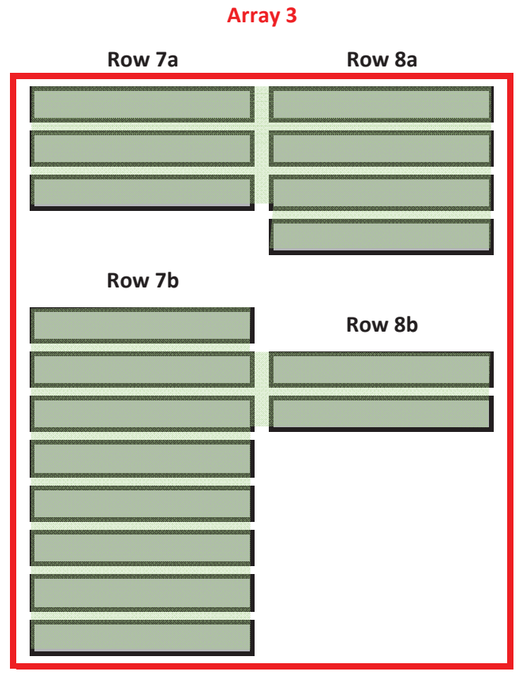
Table of Contents

Solar Panel Layout C-1
Solar Panel Area Calculations C-2
Construction Input Data C-4
Construction Noise Calculations C-5
Operational Noise Calculations C-6
Fuel Use Calculations C-7

Hellman Solar EV Electric System Project
Solar Panel Layout







2 x 28 Solar Table (56 solar panels)

2 x 10 Solar Table (20 solar panels)

Permanent Impact Area

Not to Scale

Hellman Solar EV Electric System Project
Area Calculations

Item	Array 1				Array 2				Array 3					Total All Arrays	Comments
	Row 1	Row 2	Row 3	Total	Row 4	Row 5	Row 6	Total	Row 7a	Row 7b	Row 8a	Row 8b	Total		
28x2 Tables	9	10	2	21	6	5	6	17	3	8	4	2	17	55	Table is made up of 2 panels wide by 28 panels long for a total of 3080 solar panels.
10x2 Tables	0	1	0	1	0	0	0	0	0	0	0	0	0	1	Table is made up of 2 panels wide by 10 panels long for a total of 20 solar panels.
9' Gaps Between Tables	8	9	1	18	5	3	5	13	2	6	2	1	11	--	This is the total number of gaps between tables in each row.
Area of Row (ft^2)	19,426	22,177	3,641	45,244	12,661	9,537	12,661	34,859	5,896	16,302	7,282	3,641	33,121	113,224	This is the area that would be covered by solar panels and the gaps between rows.
Area of Tables (ft^2)	12,476	14,358	2,772	29,606	8,317	6,931	8,317	23,565	4,159	11,089	5,545	2,772	23,565	76,736	This it the total area of the of just the solar panels.
# of Pile Footings	63	73	14	150	42	35	42	119	21	56	28	14	119	388	This is the number of pile footing used for each row.
Area of Pile Footings (ft^2)	111	129	25	265	74	62	74	210	37	99	49	25	210	685	This is the total area of the pile footing for each row.
Permanent Impact Area (ft^2)	20,230	22,292	3,641	46,163	13,006	9,882	12,661	35,548	6,241	16,532	7,282	3,641	33,696	115,407	The permanent impact area for each row includes the area of the row plus the space between rows.
Permanent Impact Area (acres)	0.46	0.51	0.08	1.06	0.30	0.23	0.29	0.82	0.14	0.38	0.17	0.08	0.77	2.65	The permanent impact area for each row includes the area of the row plus the space between rows.
Temporary Impacted Area (ft^2)	8,206	8,955	4,216	21,376	8,026	5,090	7,086	20,202	5,403	10,002	5,370	1,998	22,773	64,351	This is the area that would be temporarily disturbed around each row during construction, and represents a 20 foot area on all sides of the row.
Temporary Impacted Area (acres)	0.19	0.21	0.10	0.49	0.18	0.12	0.16	0.46	0.12	0.23	0.12	0.05	0.52	1.48	This is the area that would be temporarily disturbed around each row during construction, and represents a 20 foot area on all sides of the row.
Total Impacted Area (acres)	0.65	0.72	0.18	1.55	0.48	0.34	0.45	1.28	0.27	0.61	0.29	0.13	1.30	4.13	This is sum of the permanent and temporary impacted areas.

Solar Array Input Data

Item	Value	Source
Width of Table (ft)	14.36	Typical Detail SC 4.0, Item 8, Framing Section
28 Table Length (ft)	96.53	Typical Detail SC 3.0, Item 2, Table Purlin Spacing
10 Table Length (ft)	34.58	Typical Detail SC 3.1, Item 2, Table Purlin Spacing
2x28 Table Area (ft^2)	1,386.17	Calculated
2x10 Table Area (ft^2)	496.57	Calculated
Gap Between Rows in an Array (ft)	8.00	Typical Detail SC 2.1, Table to Table Pile Spacing
Gap Between Tables (ft)	9.00	Typical Detail SC 2.0, Site Array Layout
Temporary Disturbance on Outside of Rows (ft)	20.00	
# Support Structures for 28 Table	7.00	Typical Detail SC 3.0, Item 1, Table Purlin Spacing
# Support Structures for 10 Table	3.00	Typical Detail SC 3.1, Item 1, Table Purlin Spacing

Source: Hellman Plan Set 12-06-2022, Newport Power

Solar System Summary Table

Array#	# Solar Tables	# Solar Panels	# Support Structures
Array 1	22	1,196	150
Array 2	17	952	119
Array 3	17	952	119
Total	***56***	***3,100***	***388***

Pile Footings Input Data

Item	Value	Source
# per 28 Table	7	Typical Detail SC 3.0, Item 1, 2x28 Table Pile Spacing
# per 10 Table	3	Typical Detail SC 3.1, Item 1, 2x10 Table Pile Spacing
Diameter (ft)	1.5	Typical Detail SC 4.0, Item 1, Pile Foundation
Depth (ft)	6.25	Typical Detail SC 4.0, Item 1, Pile Foundation
Volume of Pile Footing Hole (Ft^3)	11.04	Calculated
Volume of Pile Footing Hole (cubic y	0.41	Calculated
Total Volume of Pile Footings (cubic	158	Calculated

Source: Hellman Plan Set 12-06-2022, Newport Power

Hellman Solar EV Electric System Project
Area Calculations

Equipment Pads

Pad Type	Quantity	Length (ft)	Width (ft)	Depth (ft)	Pad Area (ft^2)		
					Within Table Footprint	Outside Table Footprint	Total
Inverter/PV Subpanel Pad #1	1	38	5.5	0.33	133	76	209
Inverter/PV Subpanel Pad #2	1	33	5.5	0.33	116	66	182
Inverter/PV Subpanel Pad #3	1	17	5.5	0.33	60	34	94
Inverter/PV Subpanel Pad #4	1	17.25	5.5	0.33	60	35	95
Transformer/PV System Subpanel/AC Disconnect Switches Pad	1	33	12	0.33	0	396	396

Two feet of inverter pads would be outside of the solar array footprint.
Source: E-Mails from NewportPower (Corey Van De Hey 8-3-23 and 8-11-23)

Other Temporary Impacted Areas

Item	Length (ft)	Width (ft)	Total Area		Temporary Impacted Area	
			ft^2	acres	ft^2	acres
Trench for AC Power Lines	1,300	22	28,600	0.66	12,800	0.29
Trench for DC Power Lines	500	22	11,000	0.25	0	0.00
Staging Area	120	50	6,000	0.14	6,000	0.14

Temporary impacted area is based upon the area of the trench work that is outside of the permanent or temporary impact areas of the solar arrays.
Assumes 2 foot wide trench and 10 feet of work area on either side of trench.
Source: E-mails from NewportPower (Corey Van De Hey 8-11-23 and 8-14-23)

Total Impacted Areas

Item	Permanent		Temporary		Total	
	ft^2	Acres	ft^2	Acres	ft^2	Acres
Solar Array Tables	115,407	2.65	64,351	1.48	179,758	4.13
Equipment Pads	607	0.01	NA[1]	0.00	607	0.01
Power Line Trenches	0	0.00	12,800	0.29	12,800	0.29
Staging Area	0	0.00	6,000	0.14	6,000	0.14
Total	116,014	2.66	83,151	1.91	199,165	4.57

1. Accounted for in power line trenches.

Hellman Solar EV Electrc System Project
Construction Input Data

Construction Activity, Shedulule, and Worker and Truck Trips

Activity	Duration (days)	# Construction Workers per Day	# Vendor Visits per Day	Delivery Trucks per Day	Peak Hourly One-Way Trips			Start Date	End Date
					Worker Vechicles	Vendor Vechicles	Delivery Trucks		
Site Preparation	3	6	0	2	6	0	2	9/16/2026	9/18/2026
Support Pile Installation	21	8	1	4	8	1	2	9/21/2026	10/19/2026
Solar PV System, Equipment, and Conduit Installation	20	10	1	4	10	1	2	10/19/2026	11/13/2026
Testing and Commissioning	20	4	2	0	4	2	0	11/16/2026	12/11/2026

Offroad Construction Equipment

Site Preparation	**Quanity**	**Hours/Day**	**Hp**	**Load Factor**
Rubber Tire Dozer	1	8	84	0.37
Grader	1	8	148	0.41
Backhoe/Loader	1	8	84	0.37
Water Truck	1	4	376	0.38
Support Pile Installation				
Backhoe/Loader	1	7	84	0.37
Forklift	1	8	82	0.2
Generator	1	8	14	0.74
Water Truck	1	2	376	0.38
Solar PV System, Equipment, and Conduit Installation				
Forklift	1	8	82	0.2
Backhoe/Loader	1	7	84	0.37
Generator	1	8	14	0.74
Welding Machine	1	8	46	0.45
Water Truck	1	2	376	0.38

Hp and Load factors are defaults from CalEEMod Version 2022.1.1.29.

Estimated Noise Levels for Construction
Hellman Solar PV Project

Estimated Construction Equipment Noise

Phase/Equipment	Quantity	Noise Level (dBA)	Distance (feet)
Site Preparation			
Rubber Tire Dozer	1	82	50
Grader	1	85	50
Backhoe/Loader	1	79	50
Water Truck	1	74	50
Combined Noise Level		***88***	***50***
Noise Level at Nearest Property Line		***96***	***20***
Noise Level at Nearest Receptor		***69***	***450***
Noise Level at Nearest Residential Receptor		***68***	***480***
Support Pile Installation			
Backhoe/Loader	1	79	50
Forklift	1	75	50
Generator	1	81	50
Water Truck	1	74	50
Combined Noise Level		***84***	***50***
Noise Level at Nearest Property Line		***92***	***20***
Noise Level at Nearest Receptor		***65***	***450***
Noise Level at Nearest Residential Receptor		***65***	***480***
Solar PV System, Equipment, and Conduit Installation			
Forklift	1	75	50
Backhoe/Loader	1	79	50
Generator	1	81	50
Welding Machine	1	74	50
Water Truck	1	74	50
Combined Noise Level		***85***	***50***
Noise Level at Nearest Property Line		***93***	***20***
Noise Level at Nearest Receptor		***65***	***450***
Noise Level at Nearest Residential Receptor		***65***	***480***

Source: FHWA Construction Noise Handbook, 2006. Table 9.1

Vibration Levels

Equipment	Vibration Level (in/sec)		
	at 25-feet	at 60-feet	at 450-feet
Backhoe/Caisson Drilling	0.089	0.124	0.001
Small Bulldozer	0.003	0.004	0.000
Large Truck	0.076	0.106	0.001

Source: Adapted from FTA 2006 and Caltrans 2013.

Construction Equipment Reference Noise Levels

Equipment	Reference Noise Level (dBA@50 feet)
Rubber Tire Dozer	82
Grader	85
Backhoe/Loader	79
Water Truck	74
Forklift	75
Generator	81
Welding Machine	74

Source: FHWA Construction Noise Handbook, 2006. Table 9.1

Distance to Receptors

Distance to Nearest Property Line (feet)	20
Distance to Nearest Receptor (feet)	450
Distance to Nearest Residential Receptor (feet)	480

Estimated Noise Levels for Operations
Hellman Solar PV Project

Operational Noise Levels

Equipment	Quantity	Nearest Property Line		Nearest Residential Receptor	
		Distance (feet)	Noise Level (dBA)	Distance (feet)	Noise Level (dBA)
Inverters (1-6)	6	30	54	1,030	23
Inverters (7-11)	5	85	44	940	23
Inverters (12,14)	2	25	50	550	24
Inverters (13,15,16)	3	130	38	500	26
Transformer	1	110	22	1,150	1

Noise would only occur during daylight hours when electrical power is being generated.

Operational Noise Equipment Levels

Equipment	Noise Level (dBA)	Distance (feet)
Inverters	65	3.3
Transformer	52	3.3

Sources: CPS datasheet for 100/125kW, 1500Vdc String Inverters
https://eepower.com/technical-articles/transformer-nameplate-details-and-sound-levels/

Fuel Use Calculations
Hellman Solar PV Project

Offroad Construction Equipment

Site Preparation	Quantity	Hours/Day	Days	Hp	Load Factor	Fuel Use (gals/hr)	Fuel Use (gals)
Rubber Tire Dozer	1	8	3	84	0.37	9.6	230
Grader	1	8	3	148	0.41	3.7	88
Backhoe/Loader	1	8	3	84	0.37	3.7	88
Water Truck	1	4	3	376	0.38	8.2	98
Support Pile Installation							
Backhoe/Loader	1	7	20	84	0.37	3.7	511
Forklift	1	8	20	82	0.20	1.0	152
Generator	1	8	20	14	0.74	1.6	256
Water Truck	1	2	20	376	0.38	8.2	327
Solar PV System, Equipment, and Conduit Installation							
Forklift	1	8	21	82	0.20	1.0	160
Backhoe/Loader	1	7	21	84	0.37	3.7	537
Generator	1	8	21	14	0.74	1.6	269
Welding Machine	1	8	21	46	0.45	1.3	218
Water Truck	1	2	21	376	0.38	8.2	344
Total Offroad Construction Equipment Fuel Use							***3,277***

Construction Equipment Fuel Use by Load Factor Range

Representative Equipment Model	Fuel Use (Gals/hr)			Equipment Reference
	Low	Medium	High	
Grader	2.5	3.1	3.7	Cat 120-14 AWD JOY
Rubber Tire Dozer	6.2	7.9	9.6	Cat 824K
Backhoe/Loader	2.5	3.1	3.7	Cat 415-07
Forklift	0.7	0.8	1.0	Hyster 2.0 XT
Generator	0.6	1.3	1.6	20 kW Generator
Welding Machine	0.5	1.0	1.3	Trailblazer® 325 Diesel
Water Truck	5.2	6.7	8.2	Cat 770G

Sources: Caterpillar Performance Handbook Edition 44
https://www.generatorsource.com/Diesel_Fuel_Consumption.aspx
https://www.adaptalift.com.au/blog/how-much-diesel-does-a-forklift-use-per-hour
https://www.millerwelds.com/-/media/miller-electric/imported-mam-assets/spec-sheets/2/2/5/ed4-8.pdf

Onroad Construction Vehicles

Phase	Workers/day	Vendors/day	Trucks/day	Days	Car VMT	Truck VMT	Fuel Use (gals)
Site Preparation	6	0	2	3	475	240	58
Support Pile Installation	8	1	4	21	5,275	3,360	747
Solar PV System, Equipment, and Conduit Installation	10	1	4	20	6,080	3,200	758
Testing and Commissioning	4	2	0	20	3,712	0	162
Total Onroad Construction Equipment Fuel Use							***1,725***
Total Construction Fuel Use							**5,002**

Fuel Use Case	Fuel Use (mpg)	Miles per Trip
Trucks	6.5	20
Workers	22.9	13.2
Vendors	22.9	20

Miles per Trip from CalEEMod
Source: For Trucks-A Survey of Fuel Economy and Fuel Use by Heavy-Duty Truck Fleets. University of Michigan. October 2016.
Source for Workers/Vendors-US Department of Transportation

Equipment Group	Fuel Use (gals)		
	Diesel	Gasoline	Total
Onsite Construction Equipment	3,277	0	3,277
Onroad Construction Vehicles	1,046	679	1,725
Total	4,323	679	5,002

Operational Equipment

Item	Trips/year	VMT/year	hrs/yr	Fuel Use (gals/hr)	Fuel Use (gals)
Workers	8	480	--	--	21
Lawn Mower	--	--	6	1	6
Total Operational Fuel Use					**27**

Fuel Use for Lawn Mower is an estimate.
VMT/Year from CalEEMod.

22,342

Appendix D

Glare Analysis

FORGESOLAR GLARE ANALYSIS

Project: **Hellman Solar Project**
Solar Project at Hellman Oil Field in Seal Beach CA

Site configuration: **Hellman Solar Field-temp-0**

Created 10 Apr, 2024
Updated 25 Apr, 2024
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 116479.20058

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Central Array	10.0	180.0	0	0.0	0	0.0	-
Eastern Array 1	10.0	180.0	1,597	26.6	0	0.0	-
Eastern Array 2	10.0	180.0	1,596	26.6	0	0.0	-
Western Array	10.0	180.0	1,185	19.8	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	1,185	19.8	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	3,193	53.2	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0

Component Data

PV Arrays

Name: Central Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.754039	-118.093793	4.00	1.00	5.00
2	33.753731	-118.093800	4.00	1.00	5.00
3	33.753726	-118.093545	4.00	1.00	5.00
4	33.753631	-118.093547	4.00	1.00	5.00
5	33.753627	-118.093275	4.00	1.00	5.00
6	33.753484	-118.093276	4.00	1.00	5.00
7	33.753483	-118.092995	4.00	1.00	5.00
8	33.753799	-118.092995	4.00	1.00	5.00
9	33.753800	-118.093269	4.00	1.00	5.00
10	33.753903	-118.093269	4.00	1.00	5.00
11	33.753908	-118.093539	4.00	1.00	5.00
12	33.754034	-118.093536	4.00	1.00	5.00

Name: Eastern Array 1
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.753167	-118.092573	3.00	1.00	4.00
2	33.753160	-118.092011	3.00	1.00	4.00
3	33.752949	-118.092015	3.00	1.00	4.00
4	33.752955	-118.092298	3.00	1.00	4.00
5	33.753005	-118.092296	3.00	1.00	4.00
6	33.753011	-118.092573	3.00	1.00	4.00

Name: Eastern Array 2
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.752889	-118.092570	3.00	1.00	4.00
2	33.752886	-118.092302	3.00	1.00	4.00
3	33.752840	-118.092304	3.00	1.00	4.00
4	33.752840	-118.092023	3.00	1.00	4.00
5	33.752733	-118.092022	3.00	1.00	4.00
6	33.752736	-118.092302	3.00	1.00	4.00
7	33.752440	-118.092300	3.00	1.00	4.00
8	33.752436	-118.092569	3.00	1.00	4.00

Name: Western Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.754786	-118.094476	4.00	1.00	5.00
2	33.754214	-118.094492	4.00	1.00	5.00
3	33.754200	-118.094136	4.00	1.00	5.00
4	33.754055	-118.094141	4.00	1.00	5.00
5	33.754070	-118.094498	4.00	1.00	5.00
6	33.754171	-118.094494	4.00	1.00	5.00
7	33.754176	-118.094632	4.00	1.00	5.00
8	33.754220	-118.094630	4.00	1.00	5.00
9	33.754223	-118.094854	4.00	1.00	5.00
10	33.754388	-118.094847	4.00	1.00	5.00
11	33.754401	-118.095211	4.00	1.00	5.00
12	33.754987	-118.095183	4.00	1.00	5.00
13	33.754972	-118.094822	4.00	1.00	5.00
14	33.754800	-118.094827	4.00	1.00	5.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	33.752786	-118.090415	19.90	6.00
OP 2	2	33.752664	-118.090452	20.90	6.00
OP 3	3	33.752483	-118.090526	20.10	6.00
OP 4	4	33.752349	-118.090572	20.70	6.00
OP 5	5	33.752221	-118.090671	20.10	6.00
OP 6	6	33.752001	-118.090726	21.40	6.00
OP 7	7	33.751856	-118.090778	20.70	6.00
OP 8	8	33.751711	-118.090802	19.40	6.00
OP 9	9	33.751555	-118.090855	18.80	6.00
OP 10	10	33.751427	-118.090952	18.60	6.00
OP 11	11	33.751281	-118.091064	19.50	6.00
OP 12	12	33.751154	-118.091143	19.30	6.00
OP 13	13	33.750790	-118.091390	18.40	6.00
OP 14	14	33.750686	-118.091528	16.70	6.00
OP 15	15	33.750462	-118.091751	16.70	6.00
OP 16	16	33.750276	-118.091899	17.90	6.00
OP 17	17	33.750079	-118.091991	22.50	6.00
OP 18	18	33.750014	-118.092097	21.80	6.00
OP 19	19	33.755464	-118.097277	4.70	6.00
OP 20	20	33.754507	-118.097738	4.70	6.00
OP 21	21	33.758793	-118.099999	6.00	6.00
OP 22	22	33.757536	-118.101222	5.70	0.00
OP 23	23	33.756046	-118.103196	5.40	0.00
OP 24	24	33.755903	-118.098798	3.90	0.00
OP 25	25	33.754806	-118.100407	7.60	0.00
OP 26	26	33.752598	-118.091390	3.94	6.00
OP 27	27	33.751705	-118.091411	9.67	6.00
OP 28	28	33.752156	-118.092389	10.19	6.00
OP 29	29	33.752155	-118.095105	5.89	6.00
OP 30	30	33.751359	-118.093174	10.15	0.00
OP 31	31	33.750146	-118.094132	6.70	6.00
OP 32	32	33.749344	-118.093136	44.72	6.00
OP 33	33	33.749395	-118.095200	43.91	6.00
OP 34	34	33.749395	-118.097384	32.25	6.00

Obstruction Components

Name: Bushes and Trees Along Fence Line
Top height: 7.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	33.752566	-118.091458	3.15
2	33.752753	-118.091404	3.96
3	33.752958	-118.091458	3.92

Name: Tree Line
Top height: 20.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	33.752920	-118.090578	7.16
2	33.752090	-118.090894	11.62
3	33.751769	-118.090927	13.51
4	33.751140	-118.091350	14.68

Glare Analysis Results

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Central Array	10.0	180.0	0	0.0	0	0.0	-
Eastern Array 1	10.0	180.0	1,597	26.6	0	0.0	-
Eastern Array 2	10.0	180.0	1,596	26.6	0	0.0	-
Western Array	10.0	180.0	1,185	19.8	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	1,185	19.8	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	3,193	53.2	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0

PV: Central Array no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0

Central Array and OP 1

No glare found

Central Array and OP 2

No glare found

Central Array and OP 3

No glare found

Central Array and OP 4

No glare found

Central Array and OP 5

No glare found

Central Array and OP 6

No glare found

Central Array and OP 7

No glare found

Central Array and OP 8

No glare found

Central Array and OP 9

No glare found

Central Array and OP 10

No glare found

Central Array and OP 11

No glare found

Central Array and OP 12

No glare found

Central Array and OP 13

No glare found

Central Array and OP 14

No glare found

Central Array and OP 15

No glare found

Central Array and OP 16

No glare found

Central Array and OP 17

No glare found

Central Array and OP 18

No glare found

Central Array and OP 19

No glare found

Central Array and OP 20

No glare found

Central Array and OP 21

No glare found

Central Array and OP 22

No glare found

Central Array and OP 23

No glare found

Central Array and OP 24

No glare found

Central Array and OP 25

No glare found

Central Array and OP 26

No glare found

Central Array and OP 27

No glare found

Central Array and OP 28

No glare found

Central Array and OP 29

No glare found

Central Array and OP 30

No glare found

Central Array and OP 31

No glare found

Central Array and OP 32

No glare found

Central Array and OP 33

No glare found

Central Array and OP 34

No glare found

PV: Eastern Array 1 low potential for temporary after-image

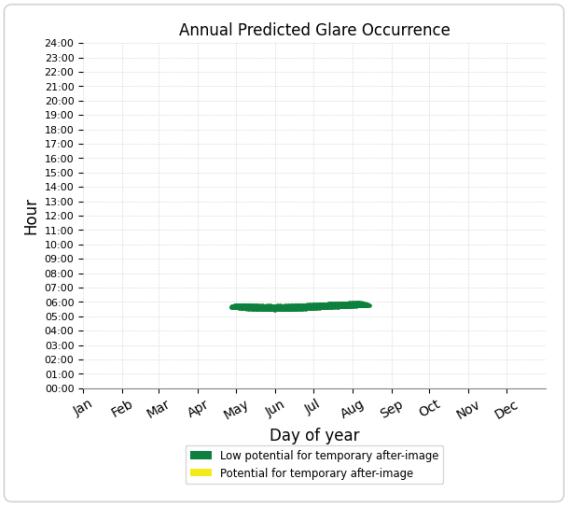
Receptor results ordered by category of glare

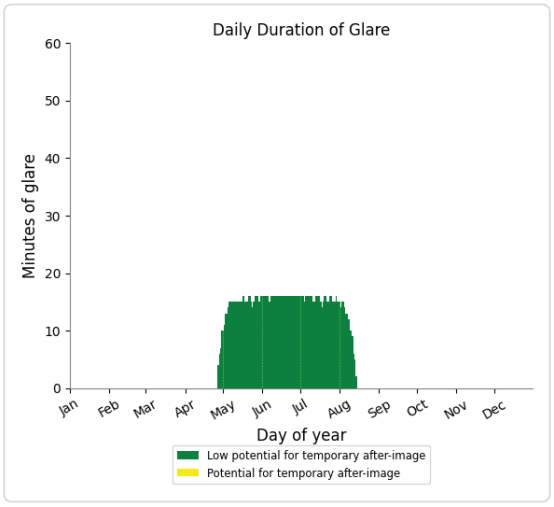
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 29	1,597	26.6	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0

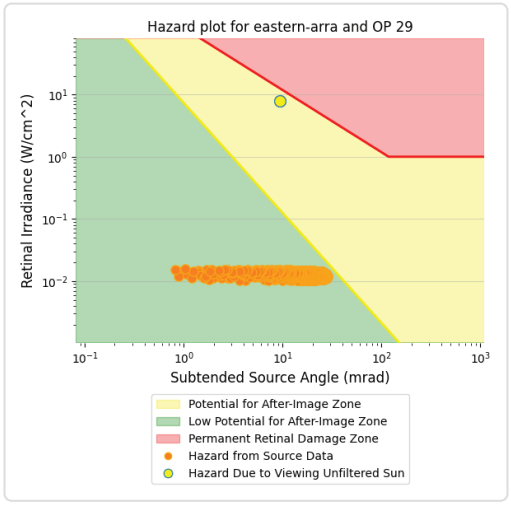
Eastern Array 1 and OP 29

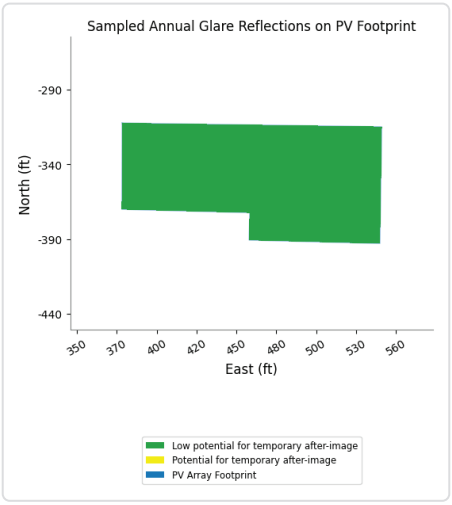
Yellow glare: none

Green glare: 1,597 min.









Eastern Array 1 and OP 1

No glare found

Eastern Array 1 and OP 2

No glare found

Eastern Array 1 and OP 3

No glare found

Eastern Array 1 and OP 4

No glare found

Eastern Array 1 and OP 5

No glare found

Eastern Array 1 and OP 6

No glare found

Eastern Array 1 and OP 7

No glare found

Eastern Array 1 and OP 8

No glare found

Eastern Array 1 and OP 9

No glare found

Eastern Array 1 and OP 10

No glare found

Eastern Array 1 and OP 11

No glare found

Eastern Array 1 and OP 12

No glare found

Eastern Array 1 and OP 13

No glare found

Eastern Array 1 and OP 14

No glare found

Eastern Array 1 and OP 15

No glare found

Eastern Array 1 and OP 16

No glare found

Eastern Array 1 and OP 17

No glare found

Eastern Array 1 and OP 18

No glare found

Eastern Array 1 and OP 19

No glare found

Eastern Array 1 and OP 20

No glare found

Eastern Array 1 and OP 21

No glare found

Eastern Array 1 and OP 22

No glare found

Eastern Array 1 and OP 23

No glare found

Eastern Array 1 and OP 24

No glare found

Eastern Array 1 and OP 25

No glare found

Eastern Array 1 and OP 26

No glare found

Eastern Array 1 and OP 27

No glare found

Eastern Array 1 and OP 28

No glare found

Eastern Array 1 and OP 30

No glare found

Eastern Array 1 and OP 31

No glare found

Eastern Array 1 and OP 32

No glare found

Eastern Array 1 and OP 33

No glare found

Eastern Array 1 and OP 34

No glare found

PV: Eastern Array 2 low potential for temporary after-image

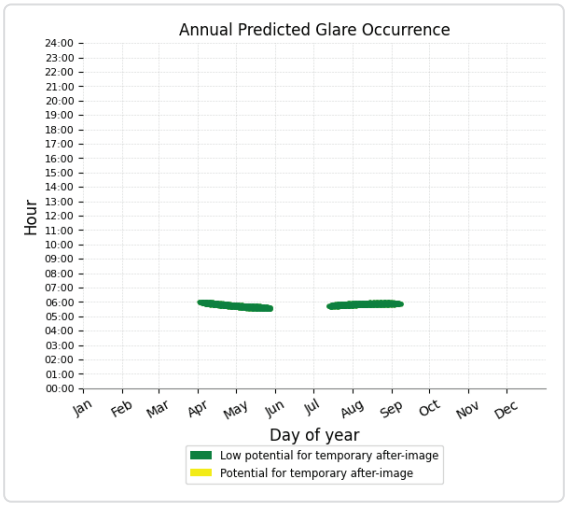
Receptor results ordered by category of glare

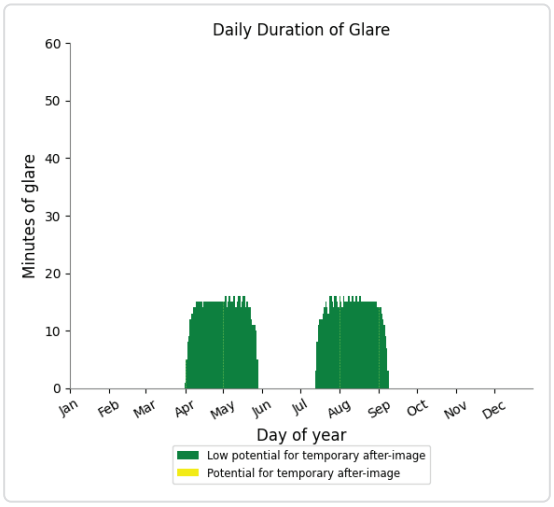
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 29	1,596	26.6	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0

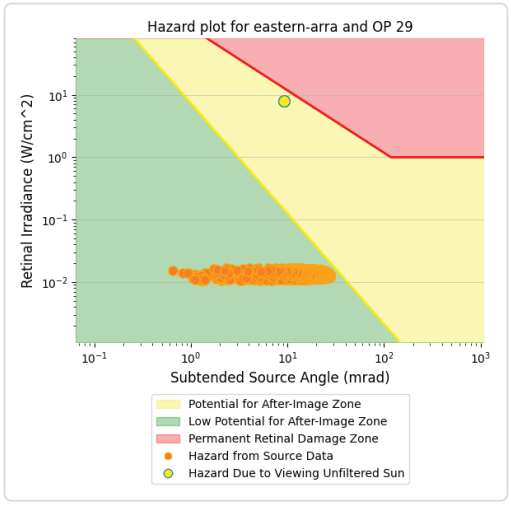
Eastern Array 2 and OP 29

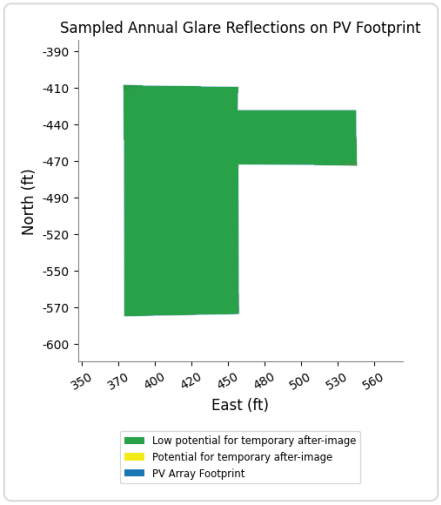
Yellow glare: none

Green glare: 1,596 min.









Eastern Array 2 and OP 1

No glare found

Eastern Array 2 and OP 2

No glare found

Eastern Array 2 and OP 3

No glare found

Eastern Array 2 and OP 4

No glare found

Eastern Array 2 and OP 5

No glare found

Eastern Array 2 and OP 6

No glare found

Eastern Array 2 and OP 7

No glare found

Eastern Array 2 and OP 8

No glare found

Eastern Array 2 and OP 9

No glare found

Eastern Array 2 and OP 10

No glare found

Eastern Array 2 and OP 11

No glare found

Eastern Array 2 and OP 12

No glare found

Eastern Array 2 and OP 13

No glare found

Eastern Array 2 and OP 14

No glare found

Eastern Array 2 and OP 15

No glare found

Eastern Array 2 and OP 16

No glare found

Eastern Array 2 and OP 17

No glare found

Eastern Array 2 and OP 18

No glare found

Eastern Array 2 and OP 19

No glare found

Eastern Array 2 and OP 20

No glare found

Eastern Array 2 and OP 21

No glare found

Eastern Array 2 and OP 22

No glare found

Eastern Array 2 and OP 23

No glare found

Eastern Array 2 and OP 24

No glare found

Eastern Array 2 and OP 25

No glare found

Eastern Array 2 and OP 26

No glare found

Eastern Array 2 and OP 27

No glare found

Eastern Array 2 and OP 28

No glare found

Eastern Array 2 and OP 30

No glare found

Eastern Array 2 and OP 31

No glare found

Eastern Array 2 and OP 32

No glare found

Eastern Array 2 and OP 33

No glare found

Eastern Array 2 and OP 34

No glare found

PV: Western Array low potential for temporary after-image

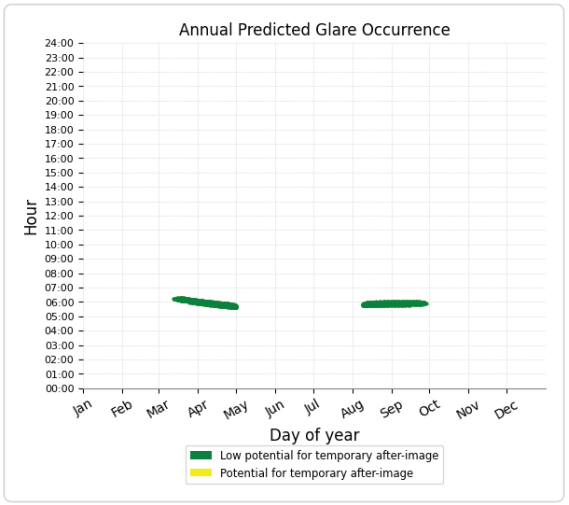
Receptor results ordered by category of glare

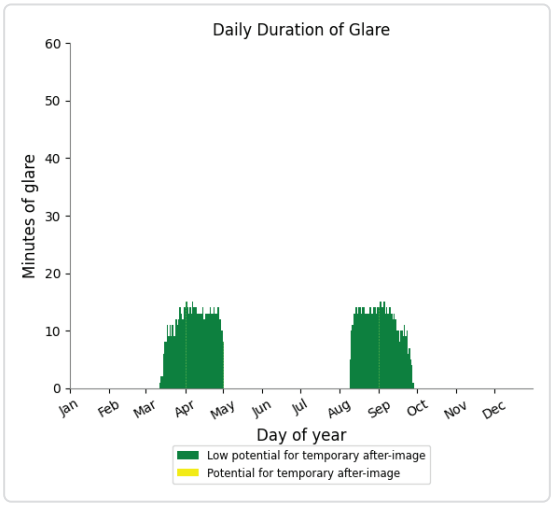
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 20	1,185	19.8	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0

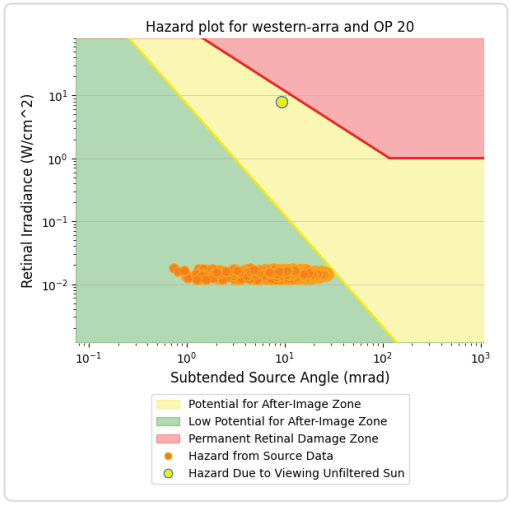
Western Array and OP 20

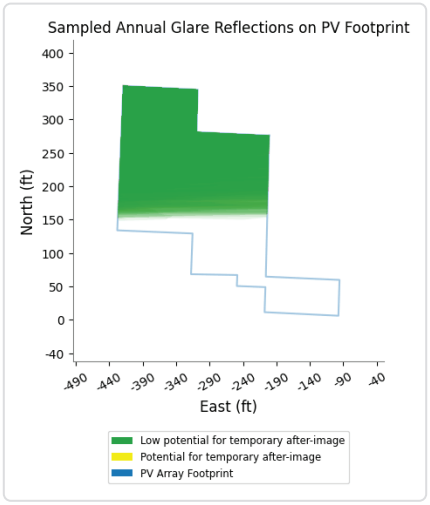
Yellow glare: none

Green glare: 1,185 min.









Western Array and OP 1

No glare found

Western Array and OP 2

No glare found

Western Array and OP 3

No glare found

Western Array and OP 4

No glare found

Western Array and OP 5

No glare found

Western Array and OP 6

No glare found

Western Array and OP 7

No glare found

Western Array and OP 8

No glare found

Western Array and OP 9

No glare found

Western Array and OP 10

No glare found

Western Array and OP 11

No glare found

Western Array and OP 12

No glare found

Western Array and OP 13

No glare found

Western Array and OP 14

No glare found

Western Array and OP 15

No glare found

Western Array and OP 16

No glare found

Western Array and OP 17

No glare found

Western Array and OP 18

No glare found

Western Array and OP 19

No glare found

Western Array and OP 21

No glare found

Western Array and OP 22

No glare found

Western Array and OP 23

No glare found

Western Array and OP 24

No glare found

Western Array and OP 25

No glare found

Western Array and OP 26

No glare found

Western Array and OP 27

No glare found

Western Array and OP 28

No glare found

Western Array and OP 29

No glare found

Western Array and OP 30

No glare found

Western Array and OP 31

No glare found

Western Array and OP 32

No glare found

Western Array and OP 33

No glare found

Western Array and OP 34

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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Appendix E

CalEEMod Air Emission Output Files

Hellman Solar PV Project Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.3. Construction Emissions by Year, Mitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

2.6. Operations Emissions by Sector, Mitigated

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

3.2. Site Preparation (2026) - Mitigated

3.3. Support Pile Installation (2026) - Unmitigated

3.4. Support Pile Installation (2026) - Mitigated

3.5. Solar PV System, Equipment, and Conduit Installation (2026) - Unmitigated

3.6. Solar PV System, Equipment, and Conduit Installation (2026) - Mitigated

3.7. Testing and Commissioning (2026) - Unmitigated

3.8. Testing and Commissioning (2026) - Mitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.1.2. Mitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.2. Electricity Emissions By Land Use - Mitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.2.4. Natural Gas Emissions By Land Use - Mitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.3.2. Mitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.4.2. Mitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.5.2. Mitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.6.2. Mitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.7.2. Mitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.8.2. Mitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.9.2. Mitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.2.2. Mitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.3.2. Mitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.9.2. Mitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.10.4. Landscape Equipment - Mitigated

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.11.2. Mitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.12.2. Mitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.13.2. Mitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.14.2. Mitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.15.2. Mitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

5.18.2.2. Mitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Hellman Solar PV Project
Construction Start Date	9/16/2026
Operational Year	2026
Lead Agency	City of Seal Beach
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.30
Precipitation (days)	18.4
Location	33.755335875286136, -118.09590644683723
County	Orange
City	Seal Beach
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5856
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	0.00	User Defined Unit	5.00	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.23	1.02	7.49	8.98	0.02	0.40	8.80	9.20	0.37	3.63	4.00	2,314	2,314	0.10	0.12	2.24	2,337
Mit.	1.23	1.02	7.49	8.98	0.02	0.40	3.38	3.77	0.37	1.43	1.80	2,314	2,314	0.10	0.12	2.24	2,337
% Reduced	—	—	—	—	—	—	62%	59%	—	61%	55%	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.35	1.05	9.18	12.1	0.03	0.29	6.76	7.04	0.26	0.81	1.07	3,756	3,756	0.18	0.25	0.12	3,834
Mit.	1.35	1.05	9.18	12.1	0.03	0.29	2.35	2.64	0.26	0.37	0.63	3,756	3,756	0.18	0.25	0.12	3,834
% Reduced	—	—	—	—	—	—	65%	63%	—	54%	41%	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.09	0.07	0.59	0.78	< 0.005	0.02	0.44	0.46	0.02	0.08	0.09	249	249	0.01	0.02	0.14	254

Mit.	0.09	0.07	0.59	0.78	< 0.005	0.02	0.16	0.18	0.02	0.03	0.05	249	249	0.01	0.02	0.14	254
% Reduced	—	—	—	—	—	—	63%	60%	—	55%	44%	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	0.01	0.11	0.14	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.02	41.2	41.2	< 0.005	< 0.005	0.02	42.1
Mit.	0.02	0.01	0.11	0.14	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	41.2	41.2	< 0.005	< 0.005	0.02	42.1
% Reduced	—	—	—	—	—	—	63%	60%	—	55%	44%	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.23	1.02	7.49	8.98	0.02	0.40	8.80	9.20	0.37	3.63	4.00	2,314	2,314	0.10	0.12	2.24	2,337
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.35	1.05	9.18	12.1	0.03	0.29	6.76	7.04	0.26	0.81	1.07	3,756	3,756	0.18	0.25	0.12	3,834
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.09	0.07	0.59	0.78	< 0.005	0.02	0.44	0.46	0.02	0.08	0.09	249	249	0.01	0.02	0.14	254
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.02	0.01	0.11	0.14	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.02	41.2	41.2	< 0.005	< 0.005	0.02	42.1

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.23	1.02	7.49	8.98	0.02	0.40	3.38	3.77	0.37	1.43	1.80	2,314	2,314	0.10	0.12	2.24	2,337
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.35	1.05	9.18	12.1	0.03	0.29	2.35	2.64	0.26	0.37	0.63	3,756	3,756	0.18	0.25	0.12	3,834
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.09	0.07	0.59	0.78	< 0.005	0.02	0.16	0.18	0.02	0.03	0.05	249	249	0.01	0.02	0.14	254
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.02	0.01	0.11	0.14	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	41.2	41.2	< 0.005	< 0.005	0.02	42.1

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.12	0.11	0.04	2.50	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	51.2	51.2	< 0.005	< 0.005	0.16	51.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.12	0.11	0.04	2.48	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	49.4	49.4	< 0.005	< 0.005	< 0.005	49.9
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.00	1.00	< 0.005	< 0.005	< 0.005	1.01
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	< 0.005	< 0.005	0.17

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.01	0.01	0.01	0.14	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	44.8	44.8	< 0.005	< 0.005	0.16	45.4
Area	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.12	0.11	0.04	2.50	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	51.2	51.2	< 0.005	< 0.005	0.16	51.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.01	0.01	0.01	0.13	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	43.0	43.0	< 0.005	< 0.005	< 0.005	43.5
Area	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.12	0.11	0.04	2.48	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	49.4	49.4	< 0.005	< 0.005	< 0.005	49.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.95	0.95	< 0.005	< 0.005	< 0.005	0.97
Area	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.03	0.03	< 0.005	< 0.005	—	0.04
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.00	1.00	< 0.005	< 0.005	< 0.005	1.01
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	< 0.005	< 0.005	0.16
Area	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.01	0.01	< 0.005	< 0.005	—	0.01
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	< 0.005	< 0.005	0.17

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.01	0.01	0.01	0.14	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	44.8	44.8	< 0.005	< 0.005	0.16	45.4
Area	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.12	0.11	0.04	2.50	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	51.2	51.2	< 0.005	< 0.005	0.16	51.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.01	0.01	0.01	0.13	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	43.0	43.0	< 0.005	< 0.005	< 0.005	43.5
Area	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.12	0.11	0.04	2.48	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	49.4	49.4	< 0.005	< 0.005	< 0.005	49.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.95	0.95	< 0.005	< 0.005	< 0.005	0.97
Area	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.03	0.03	< 0.005	< 0.005	—	0.04
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.00	1.00	< 0.005	< 0.005	< 0.005	1.01
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	< 0.005	< 0.005	0.16
Area	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.01	0.01	< 0.005	< 0.005	—	0.01
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	< 0.005	< 0.005	0.17

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.15	0.97	7.09	8.14	0.02	0.39	—	0.39	0.36	—	0.36	1,861	1,861	0.08	0.02	—	1,867
Dust From Material Movement	—	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	9.88	9.88	< 0.005	< 0.005	0.01	10.4

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	15.3	15.3	< 0.005	< 0.005	—	15.3
Dust From Material Movement	—	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	< 0.005	< 0.005	0.09
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	2.53	2.53	< 0.005	< 0.005	—	2.54
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.01
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.68	0.00	0.00	0.17	0.17	0.00	0.04	0.04	169	169	< 0.005	0.01	0.59	171
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	< 0.005	0.33	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	274	274	0.02	0.04	0.55	288
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.34	1.34	< 0.005	< 0.005	< 0.005	1.36

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.25	2.25	< 0.005	< 0.005	< 0.005	2.37
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.22	0.22	< 0.005	< 0.005	< 0.005	0.22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.37	0.37	< 0.005	< 0.005	< 0.005	0.39

3.2. Site Preparation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.15	0.97	7.09	8.14	0.02	0.39	—	0.39	0.36	—	0.36	1,861	1,861	0.08	0.02	—	1,867
Dust From Material Movement	—	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	9.88	9.88	< 0.005	< 0.005	0.01	10.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	15.3	15.3	< 0.005	< 0.005	—	15.3
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—

Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	< 0.005	< 0.005	0.09
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	2.53	2.53	< 0.005	< 0.005	—	2.54
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.01
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.68	0.00	0.00	0.17	0.17	0.00	0.04	0.04	169	169	< 0.005	0.01	0.59	171
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	< 0.005	0.33	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	274	274	0.02	0.04	0.55	288
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.34	1.34	< 0.005	< 0.005	< 0.005	1.36
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.25	2.25	< 0.005	< 0.005	< 0.005	2.37
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.22	0.22	< 0.005	< 0.005	< 0.005	0.22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.37	0.37	< 0.005	< 0.005	< 0.005	0.39

3.3. Support Pile Installation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	0.37	3.01	3.97	0.01	0.12	—	0.12	0.11	—	0.11	844	844	0.03	0.01	—	847
Onsite truck	0.01	< 0.005	0.07	0.05	< 0.005	< 0.005	2.95	2.95	< 0.005	0.29	0.29	19.8	19.8	< 0.005	< 0.005	0.03	20.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	0.37	3.01	3.97	0.01	0.12	—	0.12	0.11	—	0.11	844	844	0.03	0.01	—	847
Onsite truck	0.01	< 0.005	0.07	0.05	< 0.005	< 0.005	2.95	2.95	< 0.005	0.29	0.29	19.9	19.9	< 0.005	< 0.005	< 0.005	20.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.17	0.23	< 0.005	0.01	—	0.01	0.01	—	0.01	48.5	48.5	< 0.005	< 0.005	—	48.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	0.02	0.02	1.14	1.14	< 0.005	< 0.005	< 0.005	1.20
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	8.04	8.04	< 0.005	< 0.005	—	8.06
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	0.19	0.19	< 0.005	< 0.005	< 0.005	0.20
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.05	0.90	0.00	0.00	0.23	0.23	0.00	0.05	0.05	225	225	< 0.005	0.01	0.78	228
Vendor	0.01	< 0.005	0.11	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	121	121	0.01	0.02	0.32	127

Hauling	0.05	0.01	0.66	0.29	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	548	548	0.04	0.09	1.11	576
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.06	0.78	0.00	0.00	0.23	0.23	0.00	0.05	0.05	214	214	< 0.005	0.01	0.02	217
Vendor	0.01	< 0.005	0.11	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	121	121	0.01	0.02	0.01	126
Hauling	0.05	0.01	0.68	0.29	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	548	548	0.04	0.09	0.03	575
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	12.5	12.5	< 0.005	< 0.005	0.02	12.7
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	6.97	6.97	< 0.005	< 0.005	0.01	7.28
Hauling	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	31.5	31.5	< 0.005	< 0.005	0.03	33.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.07	2.07	< 0.005	< 0.005	< 0.005	2.09
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.15	1.15	< 0.005	< 0.005	< 0.005	1.20
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	5.22	5.22	< 0.005	< 0.005	< 0.005	5.48

3.4. Support Pile Installation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	0.37	3.01	3.97	0.01	0.12	—	0.12	0.11	—	0.11	844	844	0.03	0.01	—	847
Onsite truck	0.01	< 0.005	0.07	0.05	< 0.005	< 0.005	0.74	0.74	< 0.005	0.07	0.07	19.8	19.8	< 0.005	< 0.005	0.03	20.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.44	0.37	3.01	3.97	0.01	0.12	—	0.12	0.11	—	0.11	844	844	0.03	0.01	—	847
Onsite truck	0.01	< 0.005	0.07	0.05	< 0.005	< 0.005	0.74	0.74	< 0.005	0.07	0.07	19.9	19.9	< 0.005	< 0.005	< 0.005	20.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.17	0.23	< 0.005	0.01	—	0.01	0.01	—	0.01	48.5	48.5	< 0.005	< 0.005	—	48.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.04	0.04	< 0.005	< 0.005	< 0.005	1.14	1.14	< 0.005	< 0.005	< 0.005	1.20
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	8.04	8.04	< 0.005	< 0.005	—	8.06
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.19	0.19	< 0.005	< 0.005	< 0.005	0.20
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.05	0.90	0.00	0.00	0.23	0.23	0.00	0.05	0.05	225	225	< 0.005	0.01	0.78	228
Vendor	0.01	< 0.005	0.11	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	121	121	0.01	0.02	0.32	127
Hauling	0.05	0.01	0.66	0.29	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	548	548	0.04	0.09	1.11	576
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.06	0.78	0.00	0.00	0.23	0.23	0.00	0.05	0.05	214	214	< 0.005	0.01	0.02	217
Vendor	0.01	< 0.005	0.11	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	121	121	0.01	0.02	0.01	126
Hauling	0.05	0.01	0.68	0.29	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	548	548	0.04	0.09	0.03	575
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	12.5	12.5	< 0.005	< 0.005	0.02	12.7
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	6.97	6.97	< 0.005	< 0.005	0.01	7.28
Hauling	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	31.5	31.5	< 0.005	< 0.005	0.03	33.1

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.07	2.07	< 0.005	< 0.005	< 0.005	2.09
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.15	1.15	< 0.005	< 0.005	< 0.005	1.20
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	5.22	5.22	< 0.005	< 0.005	< 0.005	5.48

3.5. Solar PV System, Equipment, and Conduit Installation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.65	0.54	4.31	5.61	0.01	0.15	—	0.15	0.14	—	0.14	1,051	1,051	0.04	0.01	—	1,055
Onsite truck	0.01	< 0.005	0.07	0.05	< 0.005	< 0.005	2.95	2.95	< 0.005	0.29	0.29	19.9	19.9	< 0.005	< 0.005	< 0.005	20.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.24	0.31	< 0.005	0.01	—	0.01	0.01	—	0.01	57.6	57.6	< 0.005	< 0.005	—	57.8
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.15	0.15	< 0.005	0.02	0.02	1.09	1.09	< 0.005	< 0.005	< 0.005	1.14
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	9.54	9.54	< 0.005	< 0.005	—	9.57
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	0.18	0.18	< 0.005	< 0.005	< 0.005	0.19
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.07	0.97	0.00	0.00	0.28	0.28	0.00	0.07	0.07	268	268	< 0.005	0.01	0.03	271
Vendor	0.01	< 0.005	0.11	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	121	121	0.01	0.02	0.01	126
Hauling	0.05	0.01	0.68	0.29	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	548	548	0.04	0.09	0.03	575
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	14.9	14.9	< 0.005	< 0.005	0.02	15.1
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	6.64	6.64	< 0.005	< 0.005	0.01	6.93
Hauling	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	30.0	30.0	< 0.005	< 0.005	0.03	31.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.46	2.46	< 0.005	< 0.005	< 0.005	2.49
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.10	1.10	< 0.005	< 0.005	< 0.005	1.15
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	4.97	4.97	< 0.005	< 0.005	< 0.005	5.22

3.6. Solar PV System, Equipment, and Conduit Installation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.65	0.54	4.31	5.61	0.01	0.15	—	0.15	0.14	—	0.14	1,051	1,051	0.04	0.01	—	1,055

Onsite truck	0.01	< 0.005	0.07	0.05	< 0.005	< 0.005	0.74	0.74	< 0.005	0.07	0.07	19.9	19.9	< 0.005	< 0.005	< 0.005	20.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.24	0.31	< 0.005	0.01	—	0.01	0.01	—	0.01	57.6	57.6	< 0.005	< 0.005	—	57.8
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.04	0.04	< 0.005	< 0.005	< 0.005	1.09	1.09	< 0.005	< 0.005	< 0.005	1.14
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	9.54	9.54	< 0.005	< 0.005	—	9.57
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.18	0.18	< 0.005	< 0.005	< 0.005	0.19
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.07	0.97	0.00	0.00	0.28	0.28	0.00	0.07	0.07	268	268	< 0.005	0.01	0.03	271
Vendor	0.01	< 0.005	0.11	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	121	121	0.01	0.02	0.01	126
Hauling	0.05	0.01	0.68	0.29	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	548	548	0.04	0.09	0.03	575
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	14.9	14.9	< 0.005	< 0.005	0.02	15.1
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	6.64	6.64	< 0.005	< 0.005	0.01	6.93
Hauling	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	30.0	30.0	< 0.005	< 0.005	0.03	31.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.46	2.46	< 0.005	< 0.005	< 0.005	2.49
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.10	1.10	< 0.005	< 0.005	< 0.005	1.15
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	4.97	4.97	< 0.005	< 0.005	< 0.005	5.22

3.7. Testing and Commissioning (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.39	0.00	0.00	0.11	0.11	0.00	0.03	0.03	107	107	< 0.005	< 0.005	0.01	108
Vendor	0.02	< 0.005	0.22	0.10	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	242	242	0.01	0.03	0.02	253
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	5.95	5.95	< 0.005	< 0.005	0.01	6.02
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	13.3	13.3	< 0.005	< 0.005	0.02	13.9

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.98	0.98	< 0.005	< 0.005	< 0.005	1.00
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.20	2.20	< 0.005	< 0.005	< 0.005	2.29
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Testing and Commissioning (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.03	0.03	0.03	0.39	0.00	0.00	0.11	0.11	0.00	0.03	0.03	107	107	< 0.005	< 0.005	0.01	108
Vendor	0.02	< 0.005	0.22	0.10	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	242	242	0.01	0.03	0.02	253
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	5.95	5.95	< 0.005	< 0.005	0.01	6.02
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	13.3	13.3	< 0.005	< 0.005	0.02	13.9
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.98	0.98	< 0.005	< 0.005	< 0.005	1.00
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.20	2.20	< 0.005	< 0.005	< 0.005	2.29
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

4.1.2. Mitigated

Mobile source emissions results are presented in Sections 2.5. No further detailed breakdown of emissions is available.

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Total	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Total	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.01	0.01	< 0.005	< 0.005	—	0.01
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.01	0.01	< 0.005	< 0.005	—	0.01

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Total	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Total	0.11	0.10	0.03	2.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	6.37	6.37	< 0.005	< 0.005	—	6.40
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landsca Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.01	0.01	< 0.005	< 0.005	—	0.01
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.01	0.01	< 0.005	< 0.005	—	0.01

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Total	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Total	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Total	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Total	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01	< 0.005	< 0.005	—	0.01
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Grading	9/16/2026	9/18/2026	5.00	3.00	Removal of Vegetation and Clearing Site

Support Pile Installation	Building Construction	9/21/2026	10/19/2026	5.00	21.0	Installation of Solar PV Table Supports
Solar PV System, Equipment, and Conduit Installation	Building Construction	10/19/2026	11/13/2026	5.00	20.0	Installation of Solar Equipment and Conduits
Testing and Commissioning	Building Construction	11/16/2026	12/11/2026	5.00	20.0	Testing and Commissioning

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	8.00	84.0	0.37
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Off-Highway Trucks	Diesel	Average	1.00	3.00	376	0.38
Site Preparation	Off-Highway Trucks	Diesel	Average	1.00	3.00	376	0.38
Support Pile Installation	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Support Pile Installation	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Support Pile Installation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Support Pile Installation	Off-Highway Trucks	Diesel	Average	1.00	2.00	376	0.38
Solar PV System, Equipment, and Conduit Installation	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Solar PV System, Equipment, and Conduit Installation	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Solar PV System, Equipment, and Conduit Installation	Welders	Diesel	Average	1.00	8.00	46.0	0.45

Solar PV System, Equipment, and Conduit Installation	Tractors/Loaders/Back	Diesel	Average	1.00	7.00	84.0	0.37
Solar PV System, Equipment, and Conduit Installation	Off-Highway Trucks	Diesel	Average	1.00	2.00	376	0.38

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	8.00	84.0	0.37
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Off-Highway Trucks	Diesel	Average	1.00	3.00	376	0.38
Site Preparation	Off-Highway Trucks	Diesel	Average	1.00	3.00	376	0.38
Support Pile Installation	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Support Pile Installation	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Support Pile Installation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Support Pile Installation	Off-Highway Trucks	Diesel	Average	1.00	2.00	376	0.38
Solar PV System, Equipment, and Conduit Installation	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Solar PV System, Equipment, and Conduit Installation	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Solar PV System, Equipment, and Conduit Installation	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Solar PV System, Equipment, and Conduit Installation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37

Solar PV System, Equipment, and Conduit Installation	Off-Highway Trucks	Diesel	Average	1.00	2.00	376	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	12.0	20.0	LDA,LDT1,LDT2
Site Preparation	Vendor	0.00	20.0	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	2.00	1.00	HHDT
Support Pile Installation	—	—	—	—
Support Pile Installation	Worker	16.0	20.0	LDA,LDT1,LDT2
Support Pile Installation	Vendor	2.00	20.0	HHDT,MHDT
Support Pile Installation	Hauling	8.00	20.0	HHDT
Support Pile Installation	Onsite truck	4.00	1.00	HHDT
Solar PV System, Equipment, and Conduit Installation	—	—	—	—
Solar PV System, Equipment, and Conduit Installation	Worker	20.0	20.0	LDA,LDT1,LDT2
Solar PV System, Equipment, and Conduit Installation	Vendor	2.00	20.0	HHDT,MHDT
Solar PV System, Equipment, and Conduit Installation	Hauling	8.00	20.0	HHDT
Solar PV System, Equipment, and Conduit Installation	Onsite truck	4.00	1.00	HHDT
Testing and Commissioning	—	—	—	—
Testing and Commissioning	Worker	8.00	20.0	LDA,LDT1,LDT2
Testing and Commissioning	Vendor	4.00	20.0	HHDT,MHDT

Testing and Commissioning	Hauling	0.00	20.0	HHDT
Testing and Commissioning	Onsite truck	0.00	1.00	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	12.0	20.0	LDA,LDT1,LDT2
Site Preparation	Vendor	0.00	20.0	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	2.00	1.00	HHDT
Support Pile Installation	—	—	—	—
Support Pile Installation	Worker	16.0	20.0	LDA,LDT1,LDT2
Support Pile Installation	Vendor	2.00	20.0	HHDT,MHDT
Support Pile Installation	Hauling	8.00	20.0	HHDT
Support Pile Installation	Onsite truck	4.00	1.00	HHDT
Solar PV System, Equipment, and Conduit Installation	—	—	—	—
Solar PV System, Equipment, and Conduit Installation	Worker	20.0	20.0	LDA,LDT1,LDT2
Solar PV System, Equipment, and Conduit Installation	Vendor	2.00	20.0	HHDT,MHDT
Solar PV System, Equipment, and Conduit Installation	Hauling	8.00	20.0	HHDT
Solar PV System, Equipment, and Conduit Installation	Onsite truck	4.00	1.00	HHDT
Testing and Commissioning	—	—	—	—
Testing and Commissioning	Worker	8.00	20.0	LDA,LDT1,LDT2
Testing and Commissioning	Vendor	4.00	20.0	HHDT,MHDT
Testing and Commissioning	Hauling	0.00	20.0	HHDT
Testing and Commissioning	Onsite truck	0.00	1.00	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	5.00	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Industrial	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	346	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	1.00	0.00	0.00	8.00	60.0	0.00	0.00	480

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	0.00	0.00	—

5.10.3. Landscape Equipment

Equipment Type	Fuel Type	Number Per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Lawn Mowers	Gasoline 4-Stroke	1.00	3.00	6.00	3.86	0.36

5.10.4. Landscape Equipment - Mitigated

Equipment Type	Fuel Type	Number Per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Lawn Mowers	Gasoline 4-Stroke	1.00	3.00	6.00	3.86	0.36

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
User Defined Industrial	0.00	346	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
User Defined Industrial	0.00	346	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
User Defined Industrial	0.00	1,500

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
User Defined Industrial	0.00	1,500

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
User Defined Industrial	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
User Defined Industrial	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	7.09	annual days of extreme heat
Extreme Precipitation	3.75	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.40	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A

Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	24.9
AQ-PM	60.5
AQ-DPM	40.5
Drinking Water	9.13
Lead Risk Housing	59.7
Pesticides	36.1
Toxic Releases	95.0
Traffic	53.4
Effect Indicators	—
CleanUp Sites	90.0
Groundwater	88.5
Haz Waste Facilities/Generators	89.8
Impaired Water Bodies	91.9
Solid Waste	67.5
Sensitive Population	—
Asthma	8.70
Cardio-vascular	22.7
Low Birth Weights	7.95
Socioeconomic Factor Indicators	—
Education	21.7
Housing	58.8
Linguistic	5.64
Poverty	0.83
Unemployment	32.3

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	97.84421917
Employed	59.16848454
Median HI	—
Education	—
Bachelor's or higher	89.32375209
High school enrollment	12.79353266
Preschool enrollment	95.7141024
Transportation	—
Auto Access	93.63531374
Active commuting	53.95868087
Social	—
2-parent households	51.8285641
Voting	90.4016425
Neighborhood	—
Alcohol availability	51.59758758
Park access	81.35506224
Retail density	52.62414988
Supermarket access	74.83639163
Tree canopy	28.25612729
Housing	—
Homeownership	99.76902348
Housing habitability	85.98742461
Low-inc homeowner severe housing cost burden	37.05889901
Low-inc renter severe housing cost burden	54.20248941

Uncrowded housing	83.16437829
Health Outcomes	—
Insured adults	89.59322469
Arthritis	0.0
Asthma ER Admissions	89.7
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	87.6
Cognitively Disabled	60.3
Physically Disabled	86.7
Heart Attack ER Admissions	70.3
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	19.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	19.2

Children	95.4
Elderly	10.4
English Speaking	98.1
Foreign-born	4.6
Outdoor Workers	93.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	30.4
Traffic Density	43.9
Traffic Access	23.0
Other Indices	—
Hardship	11.8
Other Decision Support	—
2016 Voting	93.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	23.0
Healthy Places Index Score for Project Location (b)	92.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Characteristics: Utility Information	This is the gas company that supplies gas to Hellman Property
Land Use	This is a solar PV Project that is on an 5-acre site. There are no buildings associated with the project.
Construction: Construction Phases	For the solar PV Project these are the defined tasks.
Construction: Off-Road Equipment	Equipment list and quantity of each type by task based upon data provided by contractor.
Construction: Dust From Material Movement	Site has limited grading. Only needed for removal of vegetation. Site is level.
Construction: On-Road Fugitive Dust	The main entrance road to the Hellman facility is paved. Estimated 50% of onsite travel on unpaved roads.
Construction: Architectural Coatings	Project involves no architectural coating work.
Construction: Trips and VMT	Number of workers and trucks based upon construction estimates for each phase. Increase worker and vendor trip length to 20 miles one way.
Operations: Vehicle Data	Minimal operational support is needed. Daily checks of equipment would be done by existing Hellman staff. Occasional technical maintenance and washing of panels would be needed. A conservative estimate has been one weekday trip per day.
Operations: Water and Waste Water	Estimated that about 1,500 gallons of water would be needed to wash the panels, which would be done once per year.
Operations: Architectural Coatings	The project has no architectural coatings

Appendix F

Biological Technical Report

BIOLOGICAL TECHNICAL REPORT

FOR

HELLMAN PROPERTY SOLAR PANEL ARRAY

LOCATED IN THE CITY OF SEAL BEACH, ORANGE COUNTY, CALIFORNIA

Prepared For:

Hellman Properties LLC
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OCTOBER 2023

INFORMATION SUMMARY

A. Report Date: October 12, 2023

B. Report Title: Biological Technical Report for Hellman Property Solar Panel Array

C. Project Site Location: Seal Beach, Orange County

D. Owner/Applicant:
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F. Individuals Conducting Fieldwork: Tony Bomkamp, Erin Trung, Brittany Gale, David Moskovitz

TABLE OF CONTENTS

Page #

1.0 INTRODUCTION 1
1.1 Background and Scope of Work 1
1.2 Project Location 1
1.3 Project Description 2
2.0 METHODOLOGY 2
2.1 Botanical Resources 3
2.2 Wildlife Resources 5
2.3 Jurisdictional Waters 7
3.0 REGULATORY SETTING 8
3.1 Endangered Species Acts 8
3.2 California Environmental Quality Act 10
3.3 Jurisdictional Waters 13
4.0 RESULTS 18
4.1 Existing Conditions 18
4.2 Vegetation Mapping 19
4.3 Special-Status Vegetation Communities 22
4.4 Special-Status Plants 23
4.5 Special-Status Animals 28
4.6 Nesting Birds 39
4.7 Wildlife Linkages/ Corridors and Nursery Sites 39
4.8 Critical Habitat 40
4.9 Jurisdictional Waters 40
5.0 IMPACT ANALYSIS 41
5.1 California Environmental Quality Act (CEQA) 41
5.2 Special-Status Species 43
5.3 Sensitive Vegetation Communities 45
5.4 Wetlands 46
5.5 Wildlife Movement and Native Wildlife Nursery Sites 46
5.6 Local Policies or Ordinances 47
5.7 Habitat Conservation Plans 47
5.8 Jurisdictional Waters 47

5.9 Indirect Impacts to Biological Resources 47
6.0 MITIGATION/AVOIDANCE MEASURES 49
6.1 Nesting Birds 49
6.2 Burrowing Owl 49
6.3 Special-Status Plants 49
6.4 Least Bell's Vireo 51
7.0 REFERENCES 52
8.0 CERTIFICATION 54

TABLES

Table 2-1. Summary of Biological Surveys for the Project Site 3
Table 2-2. Summary of Wandering Skipper Surveys 7
Table 3-1. CRPR Ranks 1, 2, 3, & 4, and Threat Code Extensions 12
Table 4-1. Summary of Vegetation/Land Use Types for the Study Area 19
Table 4-2. Special-Status Plants Evaluated for the Study Area 23
Table 4-3. Special-Status Animals Evaluated for the Study Area 29
Table 5-1. Summary of Permanent and Temporary Vegetation/Land Use Impacts 45

EXHIBITS

Exhibit 1 Regional Map
Exhibit 2 Vicinity Map
Exhibit 3 Site Plan
Exhibit 4 Jurisdictional Determination Map
Exhibit 5 Soils Map
Exhibit 6a Vegetation Map
Exhibit 6b Vegetation Impact Map
Exhibit 7 Site Photographs
Exhibit 8a Special-Status Species Map
Exhibit 8b Southern Tarplant Locations Map
Exhibit 9 Special-Status Species Impact Map

APPENDICES

Appendix A Floral Compendium
Appendix B Faunal Compendium
Appendix C Jurisdictional Delineation Report
Appendix D Southern Tarplant Mitigation and Monitoring Plan for Hellman Property Solar Panel Array

1.0 INTRODUCTION

1.1 Background and Scope of Work

This document provides the results of general biological surveys and focused biological surveys for the approximately 4.57-acre Solar Panel Array (the Project) located in the City of Seal Beach, Orange County, California. This report identifies and evaluates impacts to biological resources associated with the proposed Project in the context of the California Environmental Quality Act (CEQA), and State and Federal regulations such as the California Coastal Act (CCA), Endangered Species Act (ESA), Clean Water Act (CWA), and the California Fish and Game Code.

The scope of this report includes a discussion of existing conditions for the approximately 4.57-acre Project site that is contained within a larger 12.46-acre Study Area, all methods employed regarding the general biological surveys and focused biological surveys, the documentation of botanical and wildlife resources identified (including special-status species), and an analysis of impacts to biological resources. Methods of the study include a review of relevant literature, field surveys, and a Geographical Information System (GIS)-based analysis of vegetation communities. As appropriate, this report is consistent with accepted scientific and technical standards and survey guideline requirements issued by the U.S. Fish and Wildlife Service (USFWS), the California Department of Fish and Wildlife (CDFW), the California Native Plant Society (CNPS), and other applicable agencies/organizations.

The field study focused on a number of primary objectives that would comply with CEQA, including (1) general reconnaissance survey and vegetation mapping; (2) general biological surveys; (3) habitat assessments and focused surveys for special-status plant species; (4) habitat assessments and focused surveys for special-status wildlife species; (5) assessment for the presence of wildlife migration and colonial nursery sites; (6) assessments for wetlands and environmentally sensitive habitat areas (ESHA) pursuant to the CCA; and (7) assessments for areas subject to the jurisdiction of the U.S. Army Corps of Engineers (Corps) jurisdiction pursuant to Section 404 of the Clean Water Act, State Water Quality Control Board pursuant to Section 401 of the Clean Water Act, and CDFW jurisdiction pursuant to Division 2, Chapter 6, Section 1600–1616 of the California Fish and Game Code. Observations of all plant and wildlife species were recorded during the biological studies and are included as Appendix A: Floral Compendium and Appendix B: Faunal Compendium.

1.2 Project Location

The Project site comprises approximately 4.57 acres in the City of Seal Beach, Orange County, California [Exhibit 1 – Regional Map] and is located within Sections 11 and 12 of Township 5 South, Range 12 West of the U.S. Geological Survey (USGS) 7.5-minute quadrangle map Los Alamitos, California [Exhibit 2 – Vicinity Map]. The Project site is located in the Hellman Property, which is an active oil field with a network of earthen roads, active oil wells, oil and gas storage tanks, and associated infrastructure. The Project site is located in the northeastern portion of the Hellman Property and is bordered by the Los Alamitos Retarding Basin to the north, a water quality basin associated with the Heron Pointe residential development to the east, and

active oil fields to the south and west. A portion of the Los Cerritos Wetlands, which was formerly part of the Hellman Property, is located to the south and west beyond the active oil field.

1.3 Project Description

The proposed project consists of the installation of a 1.5MW fixed-tilt ground mounted solar photovoltaic system. This system will interconnect with the Hellman Property's electrical infrastructure and operate in parallel with the utility grid to provide sustainable clean energy in support of the facilities operations. The system features 3 arrays with a total of 56 low profile table structures supported by piles with concrete foundations.

For this report, the term "Project site" is defined as that area proposed for direct impact by the proposed Project and totals 4.57 acres [Exhibit 3]. The 4.57-acre Project site includes a 2.66-acre permanent impact area and a 1.91-acre temporary impact area consisting of staging and temporary work areas. The term "Study Area" is defined as all portions of the Project site, a 100-foot buffer beyond the Project site that was included in the analysis in accordance with the requirements of the Coastal Act and the Seal Beach Local Coastal Program (LCP), and additional areas beyond the 100-foot buffer that support sensitive biological resources [Exhibit 3]. The Study Area totals 12.46 acres.

It should be noted that an access road for and a portion of the Los Alamitos Retarding Basin are located within the 100-foot buffer as depicted by Exhibit 3; however, the biological resources in these areas were not mapped or surveyed for this analysis, and these areas are not included in the Study Area.

2.0 METHODOLOGY

In order to adequately identify biological resources in accordance with the requirements of CEQA, Glenn Lukos Associates (GLA) assembled biological data consisting of the following main components:

- Delineation of aquatic resources (including wetlands and riparian habitat) subject to the jurisdiction of the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (Regional Board), CDFW, and also wetlands as defined by the California Coastal Act
- Performance of vegetation mapping for the Project site
- Performance of habitat assessments and site-specific biological surveys to evaluate the potential presence/absence of special-status species in accordance with the requirements of CEQA
- Performance of focused surveys for rare plants and wildlife.

The focus of the biological surveys was determined through initial site reconnaissance, a review of the California Natural Diversity Database CNDDB (CDFW 2022), CNPS 9th edition online inventory (CNPS 2022), Natural Resource Conservation Service soil data (NRCS 2022), other

pertinent literature, knowledge of the region, and GLA's extensive knowledge of the Hellman Property. Site-specific general surveys within the Project site and the surrounding buffer area were conducted on foot in the proposed development areas for each target plant or animal species identified below. Table 2-1 provides a summary list of survey dates, survey types and personnel.

Table 2-1. Summary of Biological Surveys for the Project Site

Survey Type	Survey Dates	Biologist(s)
General Biological Survey	July 29, August 4, 2022	TB, ET
Vegetation Mapping	July 29, August 4, August 25, October 25 2022	TB, ET, BG
Focused Botanical Surveys	July 29, August 4, 2022 February 17, March 7, 2023	TB, ET, DM
Survey for Least Bell's Vireo	July 29, August 4, August 25, 2022	TB, ET
Wandering Skipper Focused Surveys	July 29, August 4, August 25, 2022	TB, ET
Assessment for Federal and State Jurisdictional Waters and Coastal Act Wetlands	August 25, October 25, 2022 March 6, 2023	TB, ET, BG

TB = Tony Bomkamp, ET = Erin Trung, BG = Brittany Gale, DM = David Moskovitz

Individual plants and wildlife species were evaluated in this report based on their special status. For this report, plants were considered special status based on one or more of the following criteria:

- Listing through the Federal and/or State Endangered Species Act (ESA); and/or
- CNPS California Rare Plant Rank 1A, 1B, 2A, 2B, 3, or 4.

Wildlife species were considered special status based on one or more of the following criteria:

- Listing through the Federal and/or State ESA; and
- Designation by the State as a Species of Special Concern (SSC) or Fully Protected (FP) species.

Vegetation communities and habitats were considered special status based on one or more of the following criteria:

- Global (G) and/or State (S) ranking of category 3 or less based on CDFW (see Section 3.2.2 below for further explanation)/

2.1 Botanical Resources

A site-specific survey program was designed to accurately document the botanical resources within the Project site, and consisted of five components: (1) a literature search; (2) preparation

of a list of target special-status plant species and sensitive vegetation communities that could occur within the Project site; (3) general field reconnaissance survey(s); (4) vegetation mapping according to the List of Vegetation Alliances and Associations; and (5) habitat assessments and focused surveys for special-status plants.

2.1.1 Literature Search

Prior to conducting fieldwork, pertinent literature on the flora of the region was examined. A thorough archival review was conducted using available literature and other historical records. These resources included the following:

- California Native Plant Society, Rare Plant Program. Inventory of Rare and Endangered Plants of California (online edition, v-9.5, CNPS 2023)
- CNDDB for the Los Alamitos, California USGS 7.5-minute quadrangle and surrounding six quadrangles (CDFW 2023)

The literature review also included biological studies previously conducted for the Hellman Property and adjacent Los Cerritos Wetlands:

- Raptor Foraging Habitat Assessment at Hellman Ranch (GLA 2001)
- Biological Technical Report, Hellman Ranch Tank Farm Relocation Project (GLA 2006)
- Biological Technical Report for Proposed Hellman Gas Plant Project (GLA 2018)
- Los Cerritos Wetlands Habitat Assessment Report: Habitat Types & Special Status Species (Tidal Influence 2012)

2.1.2 Vegetation Mapping

Vegetation communities within the Project site were mapped according to the "Membership Rules" of the List of Vegetation Alliances and Associations (or Natural Communities List). The list is based on A Manual of California Vegetation, Second Edition or MCVII, which is the California expression of the National Vegetation Classification. Where necessary, deviations were made when areas did not fit into exact vegetation descriptions (membership rules). Non-conforming vegetation alliances or cover types were named based on the dominant plant species present. Plant communities were mapped in the field directly onto a 100-scale (1″=100′) aerial photograph.

2.1.3 Special-Status Plant Species and Habitats Evaluated for the Project Site

Based on the information compiled from the literature search, vegetation profiles and a list of target sensitive plant species and habitats that could occur within the Project site were developed and incorporated into a mapping and survey program to achieve the following goals: (1) characterize the vegetation associations and land use; (2) prepare a detailed floristic compendium; (3) identify the potential for any special-status plants that may occur within the Project site; and (4) prepare a map showing the distribution of any sensitive botanical resources associated with the Project site, if applicable.

2.1.4 Botanical Surveys

GLA biologists Tony Bomkamp and Erin Trung visited the site on July 29, and August 4, 2022, and Erin Trung and David Moskovitz visited the site on February 17 and March 6, 2023, to conduct general and focused plant survey(s). Southern tarplant was censused and mapped during 2022 surveys, and Coulter's goldfields was mapped during 2023 surveys. Survey(s) were conducted in accordance with accepted botanical survey guidelines (Nelson 1984, USFWS 2000, CNPS 2001, CDFW 2018). As applicable, survey(s) were conducted at appropriate times based on precipitation and flowering periods. An aerial photograph, a soil map, and/or a topographic map were used to determine the community types and other physical features that may support sensitive and uncommon taxa or communities within the Project site. Survey(s) were conducted by following meandering transects within target areas of suitable habitat. All plant species encountered during the field survey(s) were identified and recorded following the above-referenced guidelines. A complete list of the plant species observed is provided in Appendix A. Scientific nomenclature and common names used in this report follow Baldwin et al. (2012) and Munz (1974).

2.2 Wildlife Resources

Wildlife species were evaluated and detected during the field survey(s) by sight, call, tracks, and scat. Site reconnaissance was conducted in such a manner as to allow inspection of the entire Project site by direct observation, including the use of binoculars. Observations of physical evidence and direct sightings of wildlife were recorded in field notes during the visit(s). A complete list of wildlife species observed within the Project site is provided in Appendix B. Scientific nomenclature and common names for vertebrate species referred to in this report follow the Complete List of Amphibian, Reptile, Bird, and Mammal Species in California (CDFW 2016), Standard Common and Scientific Names for North American Amphibians, Turtles, Reptiles, and Crocodilians 6th Edition, Collins and Taggart (2009) for amphibians and reptiles, and the American Ornithological Society Checklist of Middle and North American Birds (Chesser et al. 2022) for birds. The methodology (including any applicable survey protocols) utilized to conduct general survey(s), habitat assessment(s), and/or focused surveys for special-status animals are included below.

2.2.1 General Surveys

Birds

During the general biological and reconnaissance survey within the Project site, birds were identified incidentally within each habitat type. Birds were detected by both direct observation and by vocalizations and were recorded in field notes.

Mammals

During general biological and reconnaissance survey within the Project site, mammals were identified incidentally within each habitat type. Mammals were detected both by direct observations and by the presence of diagnostic sign (i.e., tracks, burrows, scat, etc.).

Reptiles and Amphibians

During general biological and reconnaissance surveys within the Project site, reptiles and amphibians were identified incidentally during surveys within each habitat type. Habitats were examined for diagnostic reptile sign, which include shed skins, scat, tracks, snake prints, and lizard tail drag marks. All reptiles and amphibian species observed, as well as diagnostic sign, were recorded in field notes.

2.2.2 Special-Status Animal Species Evaluated for the Project Site

A literature search was conducted to obtain a list of special-status wildlife species with the potential to occur within the Project site. Species were evaluated based on two factors: 1) species identified by the CNDDB as occurring (either currently or historically) on or in vicinity of the Project site, and 2) any other special-status animals that are known to occur within the vicinity of the Project site, or for which potentially suitable habitat occurs on the Project site.

2.2.3 Habitat Assessment for Special-Status Animal Species

GLA biologist(s) Tony Bomkamp and Erin Trung conducted habitat assessments for special-status animal species on July 29, 2022. An aerial photograph, soil map and/or topographic map were used to determine the community types and other physical features that may support special-status and uncommon taxa within the Project site.

2.2.4 Focused Surveys for Special-Status Animals Species

Wandering Skipper

GLA biologists Tony Bomkamp and Erin Trung conducted focused surveys for wandering skipper (*Panoquina errans*) within areas of potentially suitable habitat in the Study Area. Focused surveys were conducted because this species is known from the Los Cerritos Wetlands (Tidal Influence 2012). There is no official survey protocol for wandering skipper, so surveys were conducted based on USFWS protocols for other skipper species. The Study Area was assessed for the presence of the larval host plant, salt grass (*Distichlis spicata*), and for nectar plants, which can include alkali heath (*Frankenia salina*), alkali heliotrope (*Heliotropium curassivicum*), and brassicas such as summer mustard (*Hirschfeldia incana*) and wild radish (*Raphanus sativa*). In areas of potentially suitable habitat, which consists of salt grass interspersed with or bordered by nectar plants, transects were slowly and methodically walked with frequent stops for observation, including with the use of binoculars. Three survey visits were conducted during the flight period, which begins as early as March and ends as late as November, but typically occurs June to September. Surveys were conducted between 9:00 am and 12:00 pm, with wind speeds less than 10 mph, and temperatures between 65° and 80°F.

Table 2-2. Summary of Wandering Skipper Surveys

Survey Date	Biologist(s)	Start/End Time	Start/End Temperature (°F)	Start/End Wind Speed (mph)	Cloud Cover
07/29/22	TB, ET	0830/0950	70°/75°	0mph/5mph	clear
08/04/22	TB	0800/1000	68°/70°	2mph/3mph	clear
08/25/22	TB, ET	0800/0950	74°/78°	0mph/5mph	clear

TB = Tony Bomkamp, ET = Erin Trung

Least Bell's Vireo

GLA biologists Tony Bomkamp and Erin Trung conducted surveys for the least Bell's vireo in the adjacent, offsite Heron Pointe detention basin, a portion of which is located in the 100-foot buffer. The basin supports a mix of willow forest, willow scrub and mulefat scrub that exhibits potential for supporting the state and federally listed migratory songbird. GLA previously observed this species within the willow and mulefat habitat during surveys in the basin for an unrelated maintenance project by the Heron Pointe HOA in 2019. Based on the previous observation, GLA biologists conducted informal surveys on July 29, August 4, and August 25, 2022, between 0700 and 0800 to determine potential presence/absence. As noted in Table 2-2 above, conditions were suitable for detection of this species. USFWS survey guidelines, which require eight survey visits during the time period from April 10 to July 31, were not followed because 1) presence/absence was able to be determined with a shortened, informal protocol, and 2) precise mapping of least Bell's vireo breeding territories was not necessary because the Heron Pointe detention basin is not within the Project site and the Project will not result in take of least Bell's vireo or impacts to its habitat.

2.3 Jurisdictional Waters

The Study area was evaluated to identify the limits of jurisdictional waters, including waters of the U.S. (including wetlands) subject to the jurisdiction of the Corps and Regional Board, waters of the State (including riparian vegetation) subject to the jurisdiction of CDFW, and wetlands as defined under the California Coastal Act. Prior to beginning the field delineation, a 100-scale color aerial photograph, a soils map, and the previously cited USGS topographic maps were examined to determine the locations of potential areas of Corps/CDFW jurisdiction. Suspected jurisdictional areas were field checked for the presence of definable channels and/or wetland vegetation, soils and hydrology. Potential wetland habitats at the subject site were evaluated using the methodology set forth in the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual (Wetland Manual) and the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Supplement (Arid West Supplement). Reference was also made to the 2019 State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (State Board Wetland Definition and Procedures) to identify suspected State wetland habitats as regulated by the Regional Board. While in the field, the locations where data was collected were recorded with a sub-meter Trimble GPS device in conjunction with a color aerial photograph using visible landmarks.

For purposes of the jurisdictional delineation, the site was separated into a "western field" and "eastern field" as depicted on Exhibit 4. In order to eliminate sampling bias, data collection points for potential wetland hydrology, soils, and vegetation in the western field were located along four transects in a rough grid pattern. The spacing between of each of the points and between the four transects was determined using a random numbers generator [Exhibit 4 – Jurisdictional Determination Map].

A portion of the 100-foot buffer adjacent to the eastern field extends into the water quality basin associated with the Heron Pointe residential development [Exhibit 4]. This basin is vegetated with riparian vegetation and may contain areas with wetland hydrology and/or hydric soil indicators. However, because it is a constructed water quality basin, is not part of the Hellman Property, and would not be impacted by the proposed project, it was not included in the jurisdictional assessment.

3.0 REGULATORY SETTING

The proposed Project is subject to state and federal laws and regulations associated with a number of regulatory programs. These programs often overlap and were developed to protect natural resources, including state and federally listed plants and animals; aquatic resources including rivers and creeks, ephemeral streambeds, wetlands, and areas of riparian habitat; special-status species which are not listed as threatened or endangered by the state or federal governments; and special-status vegetation communities.

3.1 Endangered Species Acts

3.1.1 California Endangered Species Act

California's Endangered Species Act (CESA) defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." The State defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species." Candidate species are defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission.

Article 3, Sections 2080 through 2085, of the CESA addresses the taking of threatened, endangered, or candidate species by stating "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product

thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided." Under the CESA, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow "take" require permits or memoranda of understanding and can be authorized for endangered species, threatened species, or candidate species for scientific, educational, or management purposes and for take incidental to otherwise lawful activities. Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

3.1.2 Federal Endangered Species Act

The FESA of 1973 defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of FESA: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the USFWS, through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification that result in injury to, or death of species as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a federal agency for an action that could affect a federally listed plant and animal species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants.

3.1.3 State and Federal Take Authorizations

Federal or state authorizations of impacts to or incidental take of a listed species by a private individual or other private entity would be granted in one of the following ways:

- Section 7 of the FESA stipulates that any federal action that may affect a species listed as threatened or endangered requires a formal consultation with USFWS to ensure that the action is not likely to jeopardize the continued existence of the listed species or result in destruction or adverse modification of designated critical habitat. 16 U.S.C. 1536(a)(2).
- In 1982, the FESA was amended to give private landowners the ability to develop Habitat Conservation Plans (HCP) pursuant to Section 10(a) of the FESA. Upon development of an HCP, the USFWS can issue incidental take permits for listed species where the HCP specifies at minimum, the following: (1) the level of impact that will result from the taking, (2) steps that will minimize and mitigate the impacts, (3) funding necessary to implement the plan, (4) alternative actions to the taking considered by the applicant and the reasons why such alternatives were not chosen, and (5) such other measures that the Secretary of the Interior may require as being necessary or appropriate for the plan.
- In certain circumstances, Section 2080.1 of the California Fish and Game Code allows CDFW to adopt the federal incidental take statement or the 10(a) permit as its own based on its findings that the federal permit adequately protects the species under state law.

3.2 California Environmental Quality Act

3.2.1 CEQA Guidelines Section 15380

CEQA requires evaluation of a project's impacts on biological resources and provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts. Sections 5.1.1 and 5.2.2 below set forth these thresholds and guidelines. Furthermore, pursuant to the CEQA Guidelines Section 15380, CEQA provides protection for non-listed species that could potentially meet the criteria for state listing. For plants, CDFW recognizes that plants with a California Rare Plant Rank (CRPR) of 1A, 1B, or 2 in the CNPS *Inventory of Rare and Endangered Plants in California* may meet the criteria for listing and should be considered under CEQA. CDFW also recommends protection of plants that are regionally important, such as locally rare species, disjunct populations of more common plants, or plants CNPS Ranked 3 or 4.

3.2.2 Special-Status Plants, Wildlife and Vegetation Communities Evaluated Under CEQA

Federally Designated Special-Status Species

Within recent years, the USFWS instituted changes in the listing status of candidate species. Former C1 (candidate) species are now referred to simply as candidate species and represent the only candidates for listing. Former C2 species (for which the USFWS had insufficient evidence to warrant listing) and C3 species (either extinct, no longer a valid taxon or more abundant than was formerly believed) are no longer considered as candidate species. Therefore, these species are no longer maintained in list form by the USFWS, nor are they formally protected. This term is employed in this document but carries no official protections. All references to federally protected species in this report (whether listed, proposed for listing, or candidate) include the most current published status or candidate category to which each species has been assigned by USFWS.

For this report the following acronyms are used for federal special-status species:

- FE Federally listed as Endangered
- FT Federally listed as Threatened
- FPE Federally proposed for listing as Endangered
- FPT Federally proposed for listing as Threatened
- FC Federal Candidate Species (former C1 species)

State-Designated Special-Status Species

Some mammals and birds are protected by the state as Fully Protected (SFP) Mammals or Fully Protected Birds, as described in the California Fish and Game Code, Sections 4700 and 3511, respectively. California SSC are designated as vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats. This list is primarily a working document for the CDFW's CNDDB project. Informally listed taxa are not protected but warrant

consideration in the preparation of biotic assessments. For some species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites.

For this report the following acronyms are used for State special-status species:

- SE State-listed as Endangered
- ST State-listed as Threatened
- SR State-listed as Rare
- SCE State Candidate for listing as Endangered
- SCT State Candidate for listing as Threatened
- FP State Fully Protected
- SSC State Species of Special Concern

CNDDB Global/State Rankings

The CNDDB provides global and state rankings for species and communities based on a system developed by The Nature Conservancy to measure rarity of a species. The ranking provides a shorthand formula about how rare a species/community is and is based on the best information available from multiple sources, including state and federal listings, and other groups that recognize species as sensitive (e.g., Bureau of Land Management, Audubon Society, etc.). State and global rankings are used to prioritize conservation and protection efforts so that the rarest species/communities receive immediate attention. In both cases, the lower ranking (i.e., G1 or S1) indicates extreme rarity. Rare species are given a ranking from 1 to 3. Species with a ranking of 4 or 5 is considered to be common. If the exact global/state ranking is undetermined, a range is generally provided. For example, a global ranking of "G1G3" indicates that a species/community global rarity is between G1 and G3. If the animal being considered is a subspecies of a broader species, a "T" ranking is attached to the global ranking. The following are descriptions of global and state rankings:

Global Rankings

- G1 – Critically imperiled globally because of extreme rarity (5 or fewer occurrences), or because of some factor(s) making it especially vulnerable to extinction.
- G2 – Imperiled globally because of rarity (6-20 occurrences), or because of some other factor(s) making it very vulnerable to extinction throughout its range.
- G3 – Either very rare and local throughout its range (21 to 100 occurrences) or found locally (even abundantly at some of its locations) in a restricted range (e.g., a physiographic region), or because of some other factor(s) making it vulnerable to extinction throughout its range.
- G4 – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- G5 – Common, widespread, and abundant.

State Rankings

- S1 – Extremely rare; typically 5 or fewer known occurrences in the state; or only a few remaining individuals; may be especially vulnerable to extirpation.
- S2 – Very rare; typically between 6 and 20 known occurrences; may be susceptible to becoming extirpated.
- S3 – Rare to uncommon; typically 21 to 50 known occurrences; S3 ranked species are not yet susceptible to becoming extirpated in the state but may be if additional populations are destroyed.
- S4 – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5 – Common, widespread, and abundant in the state.

California Native Plant Society/CNDDB California Rare Plant Ranks

CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in California. In a collaborative effort with CDFW's CNDDB Project, the CNPS Ninth Edition *Inventory of Rare and Endangered Plants of California* categorizes plants of interest into six California Rare Plant Ranks (CRPR) based on their geographic distribution and potential threats to existing populations. The CNPS Inventory is used by CDFW as the candidate species list for plants that may be listed as state Threatened and Endangered. The six categories of rarity are summarized in Table 3-1.

Table 3-1. CRPR Ranks 1, 2, 3, & 4, and Threat Code Extensions

CRPR Rank	Comments
Rank 1A – Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere	Thought to be extinct in California based on a lack of observation or detection for many years.
Rank 1B – Plants Rare, Threatened, or Endangered in California and Elsewhere	Species, which are generally rare throughout their range that are also judged to be vulnerable to other threats such as declining habitat.
Rank 2A – Plants presumed Extirpated in California, But Common Elsewhere	Species that are presumed extinct in California but more common outside of California
Rank 2B – Plants Rare, Threatened or Endangered in California, But More Common Elsewhere	Species that are rare in California but more common outside of California
Rank 3 – Plants About Which More Information Is Needed (A Review List)	Species that are thought to be rare or in decline but CNPS lacks the information needed to assign to the appropriate list. In most instances, the extent of surveys for these species is not sufficient to allow CNPS to accurately assess whether these species should be assigned to a specific rank. In addition, many of the Rank 3 species have associated taxonomic problems such that the validity of their current taxonomy is unclear.

CRPR Rank	Comments
Rank 4 – Plants of Limited Distribution (A Watch List)	Species that are currently thought to be limited in distribution or range whose vulnerability or susceptibility to threat is currently low. In some cases, as noted above for Rank 3 species, CNPS lacks survey data to accurately determine status in California. Many species have been placed on Rank 4 in previous editions of the "Inventory" and have been removed as survey data has indicated that the species are more common than previously thought. CNPS recommends that species currently included on this list should be monitored to ensure that future substantial declines are minimized.
Extension	**Comments**
.1 – Seriously endangered in California	Species with over 80% of occurrences threatened and/or have a high degree and immediacy of threat.
.2 – Fairly endangered in California	Species with 20-80% of occurrences threatened.
.3 – Not very endangered in California	Species with <20% of occurrences threatened or with no current threats known.

3.3 Jurisdictional Waters

3.3.1 Army Corps of Engineers

Pursuant to Section 404 of the Clean Water Act, the Corps regulates the discharge of dredged and/or fill material into waters of the United States. The term "waters of the United States" is defined in Corps regulations at 33 CFR Part 328.3(a) as:

(1) Waters which are:

(i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(ii) The territorial seas; or

(iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

(3) Tributaries of waters identified in paragraphs (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:

(i) Waters identified in paragraph (a)(1) of this section; or

(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

Corps regulations at 33 CFR Part 328.3(b) exclude the following from being "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5) above:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;

(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

(8) Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

In the absence of wetlands, the limits of Corps jurisdiction in non-tidal waters, such as intermittent streams, extend to the OHWM which is defined at 33 CFR 328.3(c)(4) as:

> ...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

"Adjacent" wetlands are defined by 33 CFR 328.3(c)(2) as those wetlands "having a continuous surface connection" to other waters of the United States.

Wetland Definition Pursuant to Section 404 of the Clean Water Act

The term "wetlands" (a subset of "waters of the United States") is defined at 33 CFR 328.3(c)(1) as "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." In 1987 the Corps published the Wetland Manual to guide its field personnel in determining jurisdictional wetland boundaries. The methodology set forth in the Wetland Manual and the Arid West Supplement generally require that, in order to be considered a wetland, the vegetation, soils, and hydrology of an area exhibit at least minimal hydric characteristics. While the Wetland Manual and Arid West Supplement provide great detail in methodology and allow for varying special conditions, a wetland should normally meet each of the following three criteria:

- More than 50 percent of the dominant plant species at the site must be hydrophytic in nature as published in the most current national wetland plant list;

- Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation (e.g., a gleyed color, or mottles with a matrix of low chroma indicating a relatively consistent fluctuation between aerobic and anaerobic conditions); and

- Whereas the Wetland Manual requires that hydrologic characteristics indicate that the ground is saturated to within 12 inches of the surface for at least five percent of the growing season during a normal rainfall year, the Arid West Supplement does not include a quantitative criteria with the exception for areas with "problematic hydrophytic vegetation", which require a minimum of 14 days of ponding to be considered a wetland.

3.3.2 Regional Water Quality Control Board

The State Water Resource Control Board and each of its nine Regional Boards regulate the discharge of waste (dredged or fill material) into waters of the United States[1] and waters of the state. Waters of the United States are defined above in Section II.A and waters of the state are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code 13050[e]).

Section 401 of the CWA requires certification for any federal permit or license authorizing impacts to waters of the U.S. (i.e., waters that are within federal jurisdiction), such as Section 404 of the CWA and Section 10 of the Safe Rivers and Harbors Act, to ensure that the impacts do not violate state water quality standards. When a project could impact waters outside of federal jurisdiction, the Regional Board has the authority under the Porter-Cologne Water

[1] Therefore, wetlands that meet the current definition, or any historic definition, of waters of the U.S. are waters of the state. In 2000, the State Water Resources Control Board determined that all waters of the U.S. are also waters of the state by regulation, prior to any regulatory or judicial limitations on the federal definition of waters of the U.S. (California Code or Regulations title 23, section 3831(w)). This regulation has remained in effect despite subsequent changes to the federal definition. Therefore, waters of the state includes features that have been determined by the U.S. Environmental Protection Agency (U.S. EPA) or the U.S. Army Corps of Engineers (Corps) to be "waters of the U.S." in an approved jurisdictional determination; "waters of the U.S." identified in an aquatic resource report verified by the Corps upon which a permitting decision was based; and features that are consistent with any current or historic final judicial interpretation of "waters of the U.S." or any current or historic federal regulation defining "waters of the U.S." under the federal Clean Water Act.

Quality Control Act to issue Waste Discharge Requirements (WDRs) to ensure that impacts do not violate state water quality standards. Clean Water Act Section 401 Water Quality Certifications, WDRs, and waivers of WDRs are also referred to as orders or permits.

State Wetland Definition

The Water Boards define an area as wetland as follows: "An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation."

The following wetlands are waters of the state:

1. Natural wetlands;
2. Wetlands created by modification of a surface water of the state;[2] and
3. Artificial wetlands[3] that meet any of the following criteria:

    a. Approved by an agency as compensatory mitigation for impacts to other waters of the state, except where the approving agency explicitly identifies the mitigation as being of limited duration;
    b. Specifically identified in a water quality control plan as a wetland or other water of the state;
    c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or
    d. Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not waters of the state unless they also satisfy the criteria set forth in 2, 3a, or 3b):

        i. Industrial or municipal wastewater treatment or disposal,
        ii. Settling of sediment,
        iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program,
        iv. Treatment of surface waters,
        v. Agricultural crop irrigation or stock watering,
        vi. Fire suppression,
        vii. Industrial processing or cooling,

[2] "Created by modification of a surface water of the state" means that the wetland that is being evaluated was created by modifying an area that was a surface water of the state at the time of such modification. It does not include a wetland that is created in a location where a water of the state had existed historically, but had already been completely eliminated at some time prior to the creation of the wetland. The wetland being evaluated does not become a water of the state due solely to a diversion of water from a different water of the state.
[3] Artificial wetlands are wetlands that result from human activity.

viii. Active surface mining – even if the site is managed for interim wetlands functions and values,
ix. Log storage,
x. Treatment, storage, or distribution of recycled water, or
xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or
xii. Fields flooded for rice growing.[4]

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not waters of the state. If an aquatic feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a water of the state.

3.3.3 California Department of Fish and Wildlife

Pursuant to Division 2, Chapter 6, Sections 1600-1603 of the California Fish and Game Code, the CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife.

CDFW defines a stream (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." CDFW's definition of "lake" includes "natural lakes or man-made reservoirs." CDFW also defines a stream as "a body of water that flows, or has flowed, over a given course during the historic hydrologic regime, and where the width of its course can reasonably be identified by physical or biological indicators."

It is important to note that the Fish and Game Code defines wildlife to include "all wild animals, birds, plants, fish, amphibians, invertebrates, reptiles, and related ecological communities, including the habitat upon which they depend for continued viability" (FGC Division 0.5, Chapter 1, section 89.5. Furthermore, Division 2, Chapter 5, Article 6, Section 1600 et seq. of the California Fish and Game Code does not limit jurisdiction to areas defined by specific flow events, seasonal changes in water flow, or presence/absence of vegetation types or communities.

3.3.4 California Coastal Commission

The California Coastal Commission (CCC) regulates the diking, filling, or dredging of wetlands within the coastal zone. The Coastal Act Section 30121 defines "wetlands" as land "which may

[4] Fields used for the cultivation of rice (including wild rice) that have not been abandoned due to five consecutive years of non-use for the cultivation of rice (including wild rice) that are determined to be a water of the state in accordance with these Procedures shall not have beneficial use designations applied to them through the Water Quality Control Plan for the Sacramento and San Joaquin River Basins, except as otherwise required by federal law for fields that are considered to be waters of the United States. Further, agricultural inputs legally applied to fields used for the cultivation of rice (including wild rice) shall not constitute a discharge of waste to a water of the state. Agricultural inputs that migrate to a surface water or groundwater may be considered a discharge of waste and are subject to waste discharge requirements or waivers of such requirements pursuant to the Water Board's authority to issue or waive waste discharge requirements or take other actions as applicable.

be covered periodically or permanently with shallow water." The 1998 CCC Statewide Interpretive Guidelines state that hydric soils and hydrophytic vegetation "are useful indicators of wetland conditions, but the presence or absence of hydric soils and/or hydrophytes alone are not necessarily determinative when the Commission identifies wetlands under the Coastal Act. In the past, the Commission has considered all relevant information in making such determinations and relied upon the advice and judgment of experts before reaching its own independent conclusion as to whether a particular area will be considered wetland under the Coastal Act. The Commission intends to continue to follow this policy."

Areas regulated by the Corps, RWQCB, CDFW and CCC are often not coincident due to the different goals of the respective regulatory programs and because these agencies use different definitions for determining the extent of wetland areas. The Corps requires that under normal circumstances, all three wetland parameters (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) be present for an area to be considered as a jurisdictional wetland; however, the CCC policy provides for a positive determination for the presence of wetlands based on the presence of any one of the three criteria.

4.0 RESULTS

This section provides the results of general biological surveys, vegetation mapping, habitat assessments and focused surveys for special-status plants, habitat assessments and focused surveys for special-status animals, and a jurisdictional assessment for Waters of the United States (including wetlands) subject to the jurisdiction of the Corps and Regional Board, streams (including riparian vegetation) and lakes subject to the jurisdiction of CDFW, and wetlands subject to the jurisdiction of the CCC.

4.1 Existing Conditions

The Study Area is located within the Hellman Property oil field and consists of disturbed land with existing oil wells, and pipes, and associated infrastructure, internal roads, and open fields. The vegetation communities are generally disturbed with a substantial component of non-native species. The topography is flat, with elevations ranging from 2 feet above mean sea level (AMSL) in the southeast portion of the Study Area to 8 feet AMSL in the northwest portion of the study area. Soils within the Study Area consist of Bolsa silty clay loam [Exhibit 5 – Soil Map]. Annual average rainfall for the region totals about 12 inches, average annual high temperature is 74 degrees, and average annual low temperature is 56 degrees.[5]

Under existing conditions in the Study Area, areas within 100 feet of oil wells, electrical equipment, and associated facilities are subject to required maintenance/mowing due to fire risk. Fuel modification areas are periodically maintained to remove any vegetation that presents a fire hazard, but these areas support annual grasses and forbs such as ripgut (*Bromus diandrus*), wild oats (*Avena barbata*), hare barley (*Hordeum murinum* ssp. *leporinum*), five-hook bassia (*Bassia hyssopifolia*), and southern tarplant (*Centromadia parryi* ssp. *australis*) that can reestablish

[5] Data for Long Beach Daugherty Field for 1991–2020: https://www.ncei.noaa.gov/access/us-climate-normals/#dataset=normals-annualseasonal&timeframe=30&station=USW00023129

during the interval between maintenance events. Some of the fuel modification areas also include limited amounts of saltgrass and alkali heath. The 100-foot width of the fuel modification zones was determined in consultation with Orange County Fire Authority (OCFA) and California Geologic Energy Management Division (CalGEM).

In December 2022 and February 2023, Southern California Edison powerlines fell within and near the Study Area. Emergency repairs were completed without incident, including fire or damage to oil field facilities, but these events underscore the need for periodic fuel modification on the Hellman Property.

4.2 Vegetation Mapping

The Study Area supports 16 different land use and vegetation types with varying degrees of disturbance as summarized in Table 4-1 below. Where vegetation types are mapped to association, both the alliance and association are listed. Descriptions of each vegetation type follow the table. A Vegetation Map is attached as Exhibit 6a. Photographs depicting the Project site are shown in Exhibit 7.

Table 4-1. Summary of Vegetation/Land Use Types for the Study Area

VEGETATION/ LAND USE TYPE	Code	Rank	Total Study Area (acres)
Alkali heliotrope fields	--	--	0.12
Annual grassland/ herbaceous semi-natural stands	--	--	1.20
Baccharis pilularis shrubland alliance	32.060.23	S5	0.05
Disturbed *Baccharis pilularis* shrubland alliance	63.510.00	S5	0.35
Bassia hyssopifolia association	42.015.02	--	3.54
Castor bean stands	--	--	0.05
Cressa truxillensis-Distichlis spicata herbaceous alliance	46.100.09	S2	0.20
Distichlis spicata – annual grasses	41.200.13	S4	3.23
Disturbed/Developed	--	--	2.51
Malvella leprosa fields	--	--	0.11
Mixed shrub seminatural stands	--	--	0.04
Ornamental	--	--	0.01
Raphanus sativus association	--	--	0.18
Salix lasiolepis – Baccharis salicifolia shrubland alliance	61.201.06	S4	0.58
Tree tobacco stands	--	--	0.27
Total			**12.46**

Alkali heliotrope fields

The Study Area supports approximately 1.11 acre of nearly monocultural alkali heliotrope (*Heliotropium curassavicum*). There is no corresponding alliance in the Natural Communities List for this vegetation type and no state rarity rank.

Annual grassland/herbaceous semi-natural stands

The Study Area supports approximately 1.20 acre of disturbed areas vegetated with a mix of five-hook bassia (*Bassia hyssopifolia*) and non-native annual grasses including Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), ripgut (*Bromus diandrus*), wild oat (*Avena barbata*), and hare barley (*Hordeum murinum* ssp. *leporinum*). Southern tarplant (*Centromadia parryi* ssp. *australis*, CRPR 1B.1) is also present in this area. There is no corresponding alliance in the Natural Communities List for this vegetation type and no state rarity rank.

***Baccharis pilularis* shrubland alliance (coyote brush scrub)**

- ***Baccharis pilularis* (32.060.23)**

The Study Area supports an approximately 0.05-acre area along a pipeline consisting of dense coyote brush (*Baccharis pilularis*) with a few individuals of tree tobacco (*Nicotiana glauca*) and mulefat (*Baccharis salicifolia*). The membership rule for this alliance states that *Baccharis pilularis* must have greater than 50 percent absolute cover in the shrub layer. This alliance has a state rarity rank of S5.

Disturbed *Baccharis pilularis* shrubland alliance (coyote brush scrub)

The Study Area supports approximately 0.35 acre of disturbed coyote brush scrub that is within the 100-foot buffer but located off site in the Los Cerritos Wetlands property. This area consists of coyote brush with roughly 30–40 percent cover, with other component species being non-native invasives including including black mustard (*Brassica nigra*) and poison hemlock (*Conium maculatum*). The membership rule for this alliance states that *Baccharis pilularis* must have greater than 50 percent absolute cover in the shrub layer; nevertheless, this area is characterized as disturbed coyote brush scrub because it is the single most dominant species. This alliance has a state rarity rank of S5.

***Salsola tragus – Isatis tinctoria – Bassia spp*. semi-natural alliance (Russian thistle – dyers woad – five-hook bassia fields)**

- ***Bassia hyssopifolia* (42.015.02)**

The Study Area supports 3.54 acres in which five-hook bassia is either a dominant or co-dominant species. Other component species include crown daisy (*Glebionis coronaria*), summer mustard (*Hirschfeldia incana*), perennial pepperweed, stinkwort (*Dittrichia graveolens*), and alkali heliotrope. This alliance is listed in the Pending Additions to the Natural Community List, and therefore is not included in MCVII. CDFW states that "Vegetation scientists at NatureServe, the California Native Plant Society, and CDFW determine non-native stands based on a rule of at least 90% cover of non-native species without evenly distributed or diverse native forbs and grasses at any time in the growing season" (CDFW 2022d). These areas exhibit 90-percent cover

of non-native species overall, with alkali heliotrope being the only native species present with very limited cover. This alliance does not have a state rarity rank.

Castor Bean stands

The Study Area supports 0.05 acre of nearly monocultural castor bean (*Ricinus communis*). There is no corresponding alliance in the Natural Communities List for this vegetation type and no state rarity rank.

***Cressa truxillensis–Distichlis spicata* herbaceous alliance (alkali weed – salt grass playas and sinks)**

- ***Cressa truxillensis* (46.100.09)**

The Study Area supports 0.20 acre of monocultural alkali weed. The membership rules for this alliance state that *Cressa truxillensis*, *Crypsis schoenoides*, or *Distichlis spicata* are usually abundant in the herbaceous layer. The *Cressa truxillensis* association is a provisional designation with no rarity rating; however, the alliance has an S2 rarity rank, and as such CDFW identifies it as a sensitive natural community.

***Distichlis spicata* herbaceous alliance (salt grass flats)**

- ***Distichlis spicata* – annual grasses (41.200.13)**

The Study Area supports approximately 3.23 acres dominated by *Distichlis spicata* but with a substantial component of annual grasses ranging from 5 to 45 percent relative cover, including ripgut, wild oat, hare barley, and Mediterranean barley. Southern tarplant is also present. This area also has a few small, isolated patches of alkali heath that are not large enough to comprise a separate mapping unit. The membership rules for this alliance require that *Distichlis spicata* have greater than 50 percent relative cover in the herbaceous layer, and higher cover than any other grass species. The *Distichlis spicata* – annual grasses association has no state rarity rank; however, the alliance has an S4 rarity rank.

Disturbed/Developed

The Study Area includes 2.51 acres of disturbed/developed lands, which consist of vehicular access roads, oil wells and associated infrastructure, and bare ground. Some southern tarplant occurs on road margins and otherwise unvegetated areas.

***Malvella leprosa* fields**

The Study Area includes a 0.11-acre area of nearly monocultural alkali mallow (*Malvella leprosa*). There is no corresponding alliance in the Natural Communities List for this vegetation type and no state rarity rank.

Mixed Shrub Seminatural Stands

This vegetation type is limited to a 0.04-acre disturbed area of stockpiled broken concrete and other debris. Component species consist of coyote brush, pampas grass (*Cortaderia* sp.), and tree tobacco in approximately equal proportions. There is no corresponding alliance in the Natural Communities List for this vegetation type and no state rarity rank.

Ornamental

This vegetation type consists of a single Canary Island date palm (*Phoenix canariensis*) covering 0.01 acre.

***Brassica nigra – Centaurea* semi-natural alliance (upland mustards or star-thistle fields)**

- ***Raphanus sativus* (42.011.04)**

The Study Area supports approximately 0.18 acre of nearly monocultural wild radish (*Raphanus sativus*). The membership rules for this alliance require that the mustard species be dominant in the herbaceous layer. There is no state rarity rank for this alliance.

***Salix lasiolepis* shrubland alliance (arroyo willow thickets)**

- ***Salix lasiolepis – Baccharis salicifolia* (61.201.06)**

The 100-foot buffer includes a 0.58-acre portion of the water quality basin associated with the Heron Pointe residential development, which is subject to periodic maintenance. Dominant species in the tree and shrub layers of the basin include *Salix lasiolepis* and *Baccharis salicifolia*. The membership rules for this alliance state that *Salix lasiolepis* must have greater than 50 percent relative cover in the tree canopy. The state rarity rank for the alliance and association are both S4.

Tree Tobacco Stands

The Study Area supports 0.27 acre of nearly monocultural tree tobacco. There is no corresponding alliance in the Natural Communities List for this vegetation type, and no state rarity rank.

4.3 Special-Status Vegetation Communities

The CNDDB identifies the following five special-status vegetation communities for the Los Alamitos, Seal Beach, Long Beach, South Gate, Whittier, La Habra, Anaheim, and Newport Beach quadrangle maps: Southern Foredunes, Southern Dune Scrub, Southern Coastal Salt Marsh, Southern Cottonwood Willow Riparian Forest, California Walnut Woodland.

The Study Area contains one special-status vegetation type, the *Cressa truxillensis–Distichlis spicata* herbaceous alliance, which has an S2 rarity rating.

4.4 Special-Status Plants

One special-status plant species, southern tarplant (*Centromadia parryi* ssp. *australis*), was detected in the Study Area in 2022, and a second species, Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*) was detected in the Study Area in 2023. Both of these species were previously detected in the Study Area during focused surveys conducted in 2009 and 2010, and southern tarplant is also known historically from other locations on the Hellman Property and Los Cerritos Wetlands. Table 4-2 provides a list of special-status plants evaluated for the Project site through general biological surveys, habitat assessments, and focused surveys. Species were evaluated based on the following factors: 1) species identified by the CNDDB and CNPS as occurring (either currently or historically) on or in the vicinity of the Study Area, and 2) any other special-status plants that are known to occur within the vicinity of the Study Area, or for which potentially suitable habitat occurs within the site.

Table 4-2. Special-Status Plants Evaluated for the Study Area

Species	Status	Habitat	Potential for Occurrence
Aphanisma *Aphanisma blitoides*	Federal: None State: None CRPR: 1B.2	Sandy soils in coastal bluff scrub, coastal dunes, and coastal scrub.	Does not occur due to a lack of suitable habitat.
Brand's star phacelia *Phacelia stellaris*	Federal: None State: 1B.1 CRPR: 1B.1	Coastal scrub, coastal dunes.	Does not occur due to a lack of suitable habitat.
California box-thorn *Lycium californicum*	Federal: None State: None CRPR: 4.2	Coastal bluff scrub, coastal scrub.	Does not occur due to a lack of suitable habitat.
California Orcutt grass *Orcuttia californica*	Federal: FE State: SE CRPR: 1B.1	Vernal pools	Does not occur due to a lack of suitable habitat.
Catalina mariposa lily *Calochortus catalinae*	Federal: None State: None CRPR: 4.2	Chaparral, cismontane woodland, coastal sage scrub, valley and foothill grassland.	Does not occur due to a lack of suitable habitat.
Chaparral sand verbena *Abronia villosa* var. *aurita*	Federal: None State: None CRPR: 1B.1	Sandy soils in chaparral, coastal sage scrub.	Does not occur due to a lack of suitable habitat.
Coast woolly-heads *Nemacaulis denudata* var. *denudata*	Federal: None State: None CRPR: 1B.2	Coastal dunes.	Does not occur. This species is known from the vicinity of the Project site; however, no suitable habitat is present in the Study Area.
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	Federal: None State: None CRPR:1B.1	Playas, vernal pools, marshes and swamps (coastal salt).	Confirmed present in the Study Area in 2009, 2010, and 2023.

Species	Status	Habitat	Potential for Occurrence
Coulter's saltbush *Atriplex coulteri*	Federal: None State: None CRPR: 1B.2	Coastal bluff scrub, coastal dunes, coastal sage scrub, valley and foothill grassland. Occurring on alkaline or clay soils.	Does not occur due to a lack of suitable habitat
Davidson's saltscale *Atriplex serenana* var. *davidsonii*	Federal: None State: None CRPR: 1B.2	Alkaline soils in coastal sage scrub, coastal bluff scrub.	Does not occur due to a lack of suitable habitat.
Decumbent goldenbush *Isocoma menziesii* var. *decumbens*	Federal: None State: None CRPR: 1B.2	Chaparral, coastal scrub (sandy, often in disturbed areas)	Confirmed absent.
Estuary seablite *Suaeda esteroa*	Federal: None State: None CRPR: 1B.2	Coastal salt marsh and swamps. Occurs in sandy soils.	Does not occur due to a lack of suitable habitat r.
Gambel's water cress *Nasturtium gambelii*	Federal: FE State: ST CRPR: 1B.1	Marshes and swamps.	Does not occur due to a lack of suitable habitat.
Horn's milk-vetch *Astragalus hornii* var. *hornii*	Federal: None State: None CRPR: 1B.1	Lake margins with alkaline soils, meadows and seeps, and playas.	Does not occur. This species is known from the vicinity of the Project site; however, the known populations are assumed to be extirpated and no suitable habitat is present in the Study Area.
Intermediate mariposa-lily *Calochortus weedii* var. *intermedius*	Federal: None State: None CRPR: 1B.2	Coastal scrub, chaparral, valley and foothill grassland.	Does not occur due to a lack of suitable habitat.
Lewis' evening-primrose *Camissoniopsis lewisii*	Federal: None State: None CRPR: 3	Sandy or clay soils in coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland.	Does not occur.
Los Angeles sunflower *Helianthus nuttallii* ssp. *parishii*	Federal: None State: None CRPR: 1A	Salt and freshwater marshes, historically in Los Angeles, Orange, Riverside and San Bernardino Counties. Presumed to be extinct. Plant discovered in Santa Clarita most likely hybrid between *H. nuttallii* and *H. californicus*.	Does not occur and is presumed to be extinct.
Lucky morning-glory *Calystegia felix*	Federal: None State: None CRPR: 1B.1	Meadows and seeps, riparian scrub.	Does not occur due to a lack of suitable habitat.

Species	Status	Habitat	Potential for Occurrence
Lyon's pentachaeta *Pentachaeta lyonii*	Federal: FE State: SE CRPR: 1B.1	Chaparral (openings), coastal sage scrub, valley and foothill grassland.	Does not occur due to a lack of suitable habitat.
Many-stemmed dudleya *Dudleya multicaulis*	Federal: None State: None CRPR: 1B.2	Chaparral, coastal sage scrub, valley and foothill grassland. Often occurring in clay soils.	Does not occur due to a lack of suitable habitat.
Mud nama *Nama stenocarpum*	Federal: None State: None CRPR: 2B.2	Vernal pools and freshwater seasonal ponds.	Does not occur due to a lack of suitable habitat.
Parish's brittlescale *Atriplex parishii*	Federal: None State: None CRPR: 1B.1	Chenopod scrub, playas, vernal pools.	Does not occur due to a lack of suitable habitat.
Plummer's mariposa-lily *Calochortus plummerae*	Federal: None State: None CRPR: 4.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest.	Does not occur due to a lack of suitable habitat.
Prostrate vernal pool navarretia *Navarretia prostrata*	Federal: None State: None CRPR: 1B.1	Coastal sage scrub, valley and foothill grassland (alkaline), vernal pools. Occurring in mesic soils.	Does not occur due to a lack of suitable habitat.
Red sand-verbena *Abronia maritima*	Federal: None State: None CRPR: Rank 4.2	Coastal dunes.	Does not occur due to a lack of suitable habitat.
Salt marsh bird's-beak *Chloropyron maritimus* ssp. *maritimus*	Federal: FE State: SE CRPR:1B.2	Coastal dune, coastal salt marshes and swamps.	Does not occur due to a lack of suitable habitat.
Salt spring checkerbloom *Sidalcea neomexicana*	Federal: None State: None CRPR:2B.2	Playas, chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub.	Does not occur due to a lack of suitable habitat.
San Bernardino aster *Symphyotrichum defoliatum*	Federal: None State: None CRPR:1B.2	Meadows and seeps, marshes and swamps, coastal scrub, cismontane woodland, lower montane coniferous forest, grassland. Vernally mesic grassland or near ditches, streams and springs; disturbed areas.	Does not occur due to a lack of suitable habitat.
San Diego button-celery *Eryngium aristulatum* var. *parishii*	Federal: FE State: SE CRPR: 1B.1	Mesic soils in vernal pools, valley and foothill grasslands, coastal sage scrub.	Does not occur due to a lack of suitable habitat.
Sanford's arrowhead *Sagittaria sanfordii*	Federal: None State: None CRPR: 1B.2	Marshes and swamps (assorted shallow freshwater).	Does not occur due to a lack of suitable habitat.
Seaside cistanthe *Cistanthe maritima*	Federal: None State: None CRPR: 4.2	Sandy soils in coastal bluff scrub, coastal scrub, and valley and foothill grassland.	Does not occur due to a lack of suitable habitat.

Species	Status	Habitat	Potential for Occurrence
Small-flowered morning-glory *Convolvulus simulans*	Federal: None State: None CRPR: 4.2	Chaparral (openings), coastal sage scrub, valley and foothill grassland. Occurring on clay soils and serpentinite seeps.	Does not occur due to a lack of suitable habitat.
Small spikerush *Eleocharis parvula*	Federal: None State: None CRPR: 4.3	Marshes and swamps.	Does not occur due to a lack of suitable habitat.
South coast saltscale *Atriplex pacifica*	Federal: None State: None CRPR: 1B.2	Coastal bluff scrub, coastal dunes, coastal sage scrub, playas.	Does not occur due to a lack of suitable habitat.
South coast branching phacelia *Phacelia ramosissima* var. *austrolitoralis*	Federal: None State: None CRPR: 3.2	Sandy, sometimes rocky soils in chaparral, coastal dunes, coastal scrub, and marshes and swamps (coastal salt)	Does not occur due to a lack of suitable habitat.
Southern tarplant *Centromadia parryi* ssp. *australis*	Federal: None State: None CRPR: 1B.1	Disturbed habitats, margins of marshes and swamps, vernally mesic valley and foothill grassland, vernal pools.	Confirmed present within the Study Area in 2009, 2010, and 2022.
Southwestern spiny rush *Juncus acutus* ssp. *leopoldii*	Federal: None State: None CRPR: 4.2	Coastal dunes (mesic), meadows and seeps (alkaline seeps), and marshes and swamps (coastal salt).	Does not occur due to a lack of suitable habitat.
Ventura Marsh milk-vetch *Astragalus pycnostachyus* var. *lanosissimus*	Federal: FE State: SE CRPR: 1B.1	Coastal salt marsh. Within reach of high tide or protected by barrier beaches, more rarely near seeps on sandy bluffs.	Does not occur due to a lack of suitable habitat.
Vernal barley *Hordeum intercedens*	Federal: None State: None CRPR: 3.2	Coastal dunes, coastal sage scrub, valley and foothill grassland (saline flats and depressions), vernal pools.	Does not occur due to a lack of suitable habitat.
Woolly seablite *Suaeda taxifolia*	Federal: None State: None CRPR: 4.2	Coastal bluff scrub, coastal dunes, marshes and swamps (margins of coastal salt).	Does not occur due to a lack of suitable habitat.

STATUS

Federal
FE – Federally Endangered
FT – Federally Threatened
FC – Federal Candidate

State
SE – State Endangered
ST – State Threatened

CRPR
Rank 1A – Plants presumed extirpated in California and either rare or extinct elsewhere.
Rank 1B – Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A – Plants presumed extirpated in California, but common elsewhere.
Rank 2B – Plants rare, threatened, or endangered in California, but more common elsewhere.
Rank 3 – Plants about which more information is needed (a review list).
Rank 4 – Plants of limited distribution (a watch list).

Threat Code extension
.1 – Seriously endangered in California (over 80% occurrences threatened)
.2 – Fairly endangered in California (20-80% occurrences threatened)
.3 – Not very endangered in California (<20% of occurrences threatened or no current threats known)

OCCURRENCE

- Does not occur – The site does not contain habitat for the species and/or the site does not occur within the geographic range of the species.
- Confirmed absent – The site contains suitable habitat for the species, but the species has been confirmed absent through focused surveys.
- Not expected to occur – The species is not expected to occur onsite due to low habitat quality, however absence cannot be ruled out.
- Potential to occur – The species has a potential to occur based on suitable habitat, however its presence/absence has not been confirmed.
- Confirmed present – The species was detected onsite incidentally or through focused surveys

4.4.1 Special-Status Plants Detected at the Project Site

Southern Tarplant (*Centromadia parryi* ssp. *australis*) is a CRPR 1B.1 species, indicating that it is rare, threatened, or endangered in California and elsewhere, and is seriously endangered in California. This species is an annual herb in the sunflower family that blooms from May to November. It is adapted to and thrives in disturbed areas, and it also occurs in vernal pools, alkali playas, alkali grasslands, and along the margins of salt marshes. This species is very distinctive and flowers as early as June and sometimes into October or November.

A population of approximately 1,072 individuals was detected during focused surveys in the Study Area in 2022, of which 457 were in areas subject to ongoing fuel modification and 615 were not in fuel modification areas. Exhibit 8a depicts the locations of southern tarplant within the Study Area, including the locations of southern tarplant observed in 2009 and 2010. Exhibit 8b depicts additional populations of southern tarplant detected outside the Study Area in 2022 and historic tarplant locations surveyed in the 2000s on the Hellman Property and in the portions of the Los Cerritos Wetlands previously under Hellman Property ownership.

It should be noted that rainfall in 2022 was below average. The National Weather Service cooperative observer station in Long Beach, CA recorded rainfall at 62 percent of average for the 2021-2022 water year.[6] This may have resulted in reduced germination of the southern tarplant seedbank. However, in 2022 tarplant generally occurred in the same locations mapped in 2009 and 2010, when rainfall at the Long Beach station was at 73 and 121 percent of average, respectively.[7] Tarplant data collected in 2009 and 2010 includes only general distributional polygons, and not a numerical census of the population, so a comparison of 2022 tarplant abundance to 2009 and 2010 tarplant abundance is not possible; however, given that the tarplant was mapped in 2022 in the same general locations on the extreme northwest end of the study

[6] https://www.cnrfc.noaa.gov/monthly_precip_2022.php
[7] 2009 data: https://www.cnrfc.noaa.gov/monthly_precip_2009.php; 2010 data: https://www.cnrfc.noaa.gov/monthly_precip_2010.php

area as previous years, and was also mapped in new locations in the eastern end of the western field, it is evident that tarplant germinated sufficiently in 2022 to evaluate Project-related impacts.

Coulter's Goldfields (*Lasthenia glabrata* ssp. *coulteri*) is a CRPR 1B.1 species, indicating that it is rare, threatened, or endangered in California and elsewhere and is seriously endangered in California. This annual member of the sunflower family occurs in salt marsh areas near the coast at the extreme upper end of tidal inundation. It has also been noted on the periphery of vernal pools such as near Miramar Airfield and in alkali marshes and meadows in the inland valleys of western Riverside County.

Focused surveys conducted in 2023 detected Coulter's goldfields in the Study Area in approximately the same location as previous focused surveys conducted by GLA in 2009 and 2010 [Exhibit 8a]. The Coulter's goldfields nearest the proposed Project footprint are located between 36 and 73 feet away.

Rainfall preceding and between the two focused survey visits on February 17 and March 7, 2023, totaled 6.32 inches in January 2023 and 2.90 inches in February 2023. The average rainfall during 1991–2020 for January was 2.89 inches and February was 3.02 inches, indicating that rainfall for January and February 2023 combined was above the 30-year average.[8] As such, the population of Coulter's goldfields mapped during surveys likely represents the maximum extent of the population present in the Study Area.

4.4.2 Special-Status Plants Confirmed Absent Through Focused Surveys at the Project Site

Decumbent goldenbush (*Isocoma menziesii* var. *decumbens*)

Decumbent goldenbush is a CRPR 1B.2 species, indicating that it is rare, threatened, or endangered in California and elsewhere, and is fairly endangered in California. This perennial member of the sunflower family occurs in coastal scrub and chaparral in sandy soils and is often in disturbed areas. This distinctive variety of goldenbush was included as a target species for focused surveys because it is known from disturbed areas in coastal southern California. Decumbent goldenbush was not detected during focused surveys.

4.5 Special-Status Animals

One special-status animal species, least Bell's vireo (*Vireo bellii pusillus*) was detected in the Study Area during general and focused surveys for the Project. Several other special-status animals are known to occur from past biological surveys in and around the Hellman Property. Table 4-3 provides a list of special-status animals evaluated for the Project site through general biological surveys, habitat assessments, and focused surveys. Species were evaluated based on the following factors, including: 1) species identified by the CNDDB as occurring (either currently or historically) on or in the vicinity of the Study Area, and 2) any other special-status

[8] https://www.ncei.noaa.gov/access/us-climate-normals/#dataset=normals-monthly&timeframe=30&station=USW00023129

animals that are known to occur within the vicinity of the Study Area, for which potentially suitable habitat occurs on the site.

Table 4-3. Special-Status Animals Evaluated for the Study Area

Species Name	Status	Habitat Requirements	Potential for Occurrence
INVERTEBRATES			
Crotch bumble bee *Bombus crotchii*	Federal: None State: SC	Relatively warm and dry sites, including the inner Coast Range of California and margins of the Mojave Desert.	Does not occur due to a lack of suitable habitat and high degree of disturbance in Study Area.
Dorothy's El Segundo Dune weevil *Trigonoscuta dorothea dorothea*	Federal: None State: None	Sand dunes in El Segundo, CA.	Does not occur due to a lack of suitable habitat.
Globose dune beetle *Coelus globosus*	Federal: None State: None	Inhabits foredunes and sand hummocks; it burrows beneath the sand surface and is most common beneath dune vegetation.	Does not occur due to a lack of suitable habitat.
Mimic tryonia (California brackish water snail) *Tryonia imitator*	Federal: None State: None	Coastal areas with brackish waters.	Does not occur due to a lack of suitable habitat.
Monarch – California overwintering population *Danaus plexippus plexippus* pop. 1	Federal: FC State: None	Roosts in winter in wind-protected tree groves along the California coast from northern Mendocino to Baja California, Mexico.	Does not occur. Known wintering population in nearby Gum Grove Park, but no wintering habitat present in the Study Area.
Palos Verdes blue butterfly *Glaucopsyche lygdamus palosverdesensis*	Federal: FE State: None	Locoweed and deerweed in the Palos Verdes Peninsula.	Does not occur due to a lack of suitable habitat and larval host plants.
Riverside fairy shrimp *Streptocephalus wootoni*	Federal: FE State: None	Deep seasonal vernal pools, with warm water, and low to moderate dissolved solids, that remained filled for extended periods of time. Annual grasslands or patches.	Does not occur due to a lack of suitable vernal pool habitat.
Salt marsh wandering skipper *Panoquina errans*	Federal: None State: None ICUN: NT (near threatened)	Coastal salt marsh and coastal strand areas dominated by saltgrass.	Confirmed absent.
San Diego fairy shrimp *Branchinecta sandiegonensis*	Federal: FE State: None	Seasonal vernal pools.	Does not occur due to a lack of suitable vernal pool habitat.

Species Name	Status	Habitat Requirements	Potential for Occurrence
Sandy beach tiger beetle *Cicindela hirticollis gravida*	Federal: None State: None	Coastal dunes.	Does not occur due to a lack of suitable habitat.
Senile tiger beetle *Cicindela senilis frosti*	Federal: None State: None	Forages in open unvegetated areas such as marsh pans and levees.	Does not occur due to a lack of suitable habitat.
Western beach tiger beetle *Cicindela latesignata*	Federal: None State: None	Mudflats and beaches.	Does not occur due to a lack of suitable habitat.
Western tidal-flat tiger beetle *Habroscelimorpha gabbii*	Federal: None State: None	Open, unvegetated areas in or near salt marshes.	Does not occur due to a lack of suitable habitat.
AMPHIBIANS			
Arroyo toad *Anaxyrus californicus*	Federal: FE State: SSC	Historically along length of drainages; currently in headwaters, sandy washes and arroyos grown to willows, cottonwoods or sycamores.	Does not occur due to a lack of suitable habitat.
California red-legged frog *Rana draytonii*	Federal: FT State: SSC	Permanent flowing water sources, including marshes, streams, lakes ponds; woodland or valley foothill grasslands; sufficient vegetative cover	Does not occur due to a lack of suitable habitat.
Western spadefoot toad *Spea hammondi*	Federal: None State: SSC	Coastal sage scrub, vernal pools, and grasslands; breeds in associated temporary pools and riparian areas.	Does not occur due to a lack of suitable habitat.
REPTILES			
Coast horned lizard *Phrynosoma blainvillii*	Federal: None State: SSC	Occurs in a variety of vegetation types including coastal sage scrub, chaparral, annual grassland, oak woodland, and riparian woodlands.	Does not occur due to a lack of suitable habitat.
Coast patch-nosed snake *Salvadora hexalepis virgultea*	Federal: None State: SSC	Open areas within coastal sage scrub, chaparral, grassland, desert scrub, washes, sand flats, & rocky areas.	Does not occur due to a lack of suitable habitat.
Coastal whiptail *Aspidoscelis tigris stejnegeri*	Federal: None State: SSC	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland and riparian areas.	Does not occur due to a lack of suitable habitat.

Species Name	Status	Habitat Requirements	Potential for Occurrence
Orange-throated whiptail *Aspidoscelis hyperythra*	Federal: None State: WL	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes & other sandy areas with patches of brush & rocks. Perennial plants necessary for its major food – termites.	Does not occur due to a lack of suitable habitat.
Pacific green sea turtle *Chelonia mydas*	Federal: FT State: None IUCN: EN	Green turtles are generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. The turtles are attracted to lagoons and shoals with an abundance of marine grass and algae.	Does not occur due to a lack of suitable habitat.
Red diamond rattlesnake *Crotalus ruber*	Federal: None State: SSC	Chapparal, woodland, grassland, & desert areas from coastal San Diego county to the eastern slopes of the mountains. Occurs in rocky areas & dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	Does not occur due to a lack of suitable habitat.
Southern California legless lizard *Anniella stebbinsi*	Federal: None State: SSC	Sparse coastal sage scrub, chaparral, grassland, riparian and woodland habitats within moist sandy soil.	Does not occur due to a lack of suitable habitat.
Western pond turtle *Emys marmorata*	Federal: None State: SSC	Slow-moving permanent or intermittent streams, small ponds and lakes, reservoirs, abandoned gravel pits, permanent and ephemeral shallow wetlands, stock ponds, and treatment lagoons. Abundant basking sites and cover necessary, including logs, rocks, submerged vegetation, and undercut banks.	Does not occur due to a lack of suitable habitat.
Two-striped garter snake *Thamnophis hammondii*	Federal: None State: SSC	Highly aquatic. Found in freshwater marshes and riparian habitats, in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	Does not occur due to a lack of suitable habitat.

Species Name	Status	Habitat Requirements	Potential for Occurrence
BIRDS			
American peregrine falcon *Falco peregrinus anatum*	Federal: None State: FP	Near wetlands, lakes, rivers or other water, on cliffs, banks, dunes, mounds, also human-made structures.	Does not occur due to a lack of suitable habitat.
Bank swallow *Riparia riparia*	Federal: None State: ST	Colonial nester; nests primarily in riparian and other lowland habitats west or the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	Does not occur due to a lack of suitable habitat.
Belding's savannah sparrow *Passerculus sandwichensis beldingi*	Federal: None State: SE	Coastal salt marshes. Nests in *Salicornia* sp. in and around margins of tidal flats.	Does not occur. Known from Los Cerritos Wetlands but does not occur in the Study Area due to a lack of suitable habitat.
Bell's sage sparrow *Amphispiza belli belli*	Federal: None State: WL	Nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range. Nest located on the ground beneath a shrub or in a shrub 6-18 inches above the ground.	Does not occur due to a lack of suitable habitat.
Black skimmer *Rynchops niger*	Federal: None State: SSC	Nests on gravel bars, low islets and sandy beaches, unvegetated sites.	Does not occur due to a lack of suitable habitat.
Burrowing owl *Athene cunicularia*	Federal: None State: SSC	Open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Not expected to occur.
California black rail *Laterallus jamaicensis coturniculus*	Federal: None State: ST, FP	Salt marshes bordering larger bays, coastal spartina marshes, inland in dense, shortgrass, shallow marshes.	Does not occur due to a lack of suitable habitat.
California Brown Pelican *Pelecanus occidentalis californicus*	Federal: Delisted State: Delisted, FP	Coastal, salt bays, ocean, beaches. Nests on coastal islands of small to moderate size that afford immunity from attack by ground-dwelling predators.	Does not occur due to a lack of suitable habitat.

Species Name	Status	Habitat Requirements	Potential for Occurrence
California horned lark *Eremophila alpestris actia*	Federal: None State: WL	Coastal regions in Southern California. Short-grass prairies "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	Not expected to occur due to a lack of suitable habitat.
California least tern *Sterna antillarum browni*	Federal: FE State: SE, FP	Flat, vegetated substrates near the coast. Occurs near estuaries, bays, or harbors where fish is abundant.	Does not occur due to a lack of suitable habitat.
Coastal cactus wren *Campylorhynchus brunneicapillus sandiegensis*	Federal: None State: SSC	Southern California coastal sage scrub. Wrens require tall opuntia cactus for nesting and roosting.	Does not occur due to a lack of suitable habitat.
Coastal California gnatcatcher *Polioptila californica californica*	Federal: FT State: SSC	Low elevation coastal sage scrub and coastal bluff scrub.	Does not occur due to a lack of suitable habitat.
Cooper's hawk *Accipiter cooperii*	Federal: None State: WL	Primarily occurs in riparian areas and oak woodlands, most commonly in montane canyons. Known to use urban areas, occupying trees among residential and commercial.	Low potential to occur for foraging only
Ferruginous hawk (wintering) *Buteo regalis*	Federal: None State: WL	Only present as wintering individuals. Prefers open grasslands and agricultural areas.	Low potential to occur for foraging only.
Grasshopper sparrow *Ammodramus savannarum*	Federal: None State: SSC	Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes.	Does not occur due to a lack of suitable habitat.
Least Bell's vireo *Vireo bellii pusillus*	Federal: FE State: SE	Summer resident of southern California in low riparian in vicinity of water or in dry river bottoms. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	Does not occur in the Project site. Confirmed present in Heron Pointe water quality basin in the Study Area.
Light-footed Ridgway's rail *Rallus obsoletus levipes*	Federal: FE State: SE, FP	Found in salt marshes where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover, feeds on mollusks and crustaceans.	Does not occur due to a lack of suitable habitat.

Species Name	Status	Habitat Requirements	Potential for Occurrence
Loggerhead shrike (nesting) *Lanius ludovicianus*	Federal: None State: SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree & riparian woodlands, desert oases, scrub & washes. Prefers open country for hunting with perches for scanning and fairly dense shrubs and brush for nesting.	Confirmed present west of the Study Area within the Hellman Property during a 2008 survey. Moderate potential to occur for foraging only.
Long-eared owl *Asio otus*	Federal: None State: SSC	Riparian bottomlands grown to tall willows & cottonwoods; also belts of live oak paralleling stream courses. Require adjacent open land productive of mice and presence of old nests of crows.	Does not occur due to a lack of suitable habitat.
Merlin (wintering) *Falco columbarius*	Federal: None State: WL	Only present as wintering individuals. Forages in a variety of habitats including riparian areas such as present in the Study Area adjacent to the Project site.	Low potential to occur for foraging only.
Northern harrier (nesting) *Circus hudsonius*	Federal: None State: SSC	A variety of habitats, including open wetlands, grasslands, wet pasture, old fields, dry uplands, and croplands.	Low potential to occur for foraging only.
Osprey (nesting) *Pandion haliaetus*	Federal: None State: WL	Ocean shore, bays, fresh-water lakes, and larger streams. Large nests built in treetops within one mile of a good fish-producing body of water.	Low potential to occur for foraging only.
Short-eared owl (nesting) *Asio flammeus*	Federal: None State: SSC	Found in swamplands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	Low potential to occur for wintering only. Known from Los Cerritos Wetlands.
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	Federal: None State: WL	Resident in Southern California coastal sage scrub and sparse mixed chaparral.	Not expected to occur due to a lack of suitable habitat.
Southwestern willow flycatcher *Empidonax traillii extimus*	Federal: FE State: SE	Riparian woodlands in southern California.	Does not occur due to a lack of suitable habitat.

Species Name	Status	Habitat Requirements	Potential for Occurrence
Swainson's Hawk (nesting) *Buteo swainsoni*	Federal: None State: ST	Breeding habitat consists of grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands. Requires adjacent suitable foraging areas such as grasslands or alfalfa or grain fields that support rodent populations.	Does not occur due to a lack of suitable habitat.
Tricolored blackbird (nesting colony) *Agelaius tricolor*	Federal: None State: ST, SSC	Requires open water, protected nesting & foraging area with insect prey within a few km of the colony.	Does not occur due to a lack of suitable habitat.
Western least bittern (nesting) *Ixobrychus exilis*	Federal: None State: SSC	Colonial nester in marshlands and borders of ponds and reservoirs that provide ample cover. Nests usually placed low in tules over water.	Does not occur due to a lack of suitable habitat.
Western snowy plover (nesting) *Charadrius nivosus nivosus*	Federal: FT State: SSC	Sandy or gravelly beaches along the coast, estuarine salt ponds, alkali lakes, and at the Salton Sea.	Does not occur due to a lack of suitable habitat.
Western yellow-billed cuckoo (nesting) *Coccyzus americanus occidentalis*	Federal: FT State: SE	Dense, wide riparian woodlands with well-developed understories.	Does not occur due to a lack of suitable habitat.
White-tailed kite (nesting) *Elanus leucurus*	Federal: None State: FP	Low elevation open grasslands, savannah-like habitats, agricultural areas, wetlands, and oak woodlands. Dense canopies used for nesting and cover.	Low potential to occur for foraging only.
Yellow-breasted chat *Icteria virens*	Federal: None State: SSC	Summer resident; inhabits riparian thickets of willow & other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.	Does not occur due to a lack of suitable habitat.
Yellow warbler (nesting) *Setophaga petechia*	Federal: None State: SSC	Riparian plant associations. Prefers willows, cottonwoods, aspens, sycamores & alders for nesting & foraging. Also nests in montane shrubbery in open conifer forests.	Does not occur due to a lack of suitable habitat.

Species Name	Status	Habitat Requirements	Potential for Occurrence
MAMMALS			
American badger *Taxidea taxus*	Federal: None State: SSC	Occurs in drier shrub, forest, and herbaceous habitats. Needs open, uncultivated ground and friable soils for digging burrows. Preys on burrowing rodents.	Does not occur due to a lack of suitable habitat.
Big free-tailed bat *Nyctinomops macrotis*	Federal: None State: SSC WBWG: MH	Occurs in low-lying arid areas in Southern California. Roosts in high cliffs or rocky outcrops.	Does not occur due to a lack of suitable habitat.
Hoary bat *Lasiurus cinereus*	Federal: None State: None WBWG: M	Prefers open habitats or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	Does not occur due to a lack of suitable habitat.
Pacific pocket mouse *Perognathus longimembris pacificus*	Federal: FE State: SSC	Seems to prefer soils of fine alluvial sands near the ocean.	Does not occur due to a lack of suitable habitat.
San Diego desert woodrat *Neotoma lepida intermedia*	Federal: None State: SSC	Occurs in a variety of shrub and desert habitats, primarily associated with rock outcrops, boulders, cacti, or areas of dense undergrowth.	Does not occur due to a lack of suitable habitat.
Silver-haired bat *Lasionycteris noctivagans*	Federal: None State: None WBWG: M	Temperate, northern hardwoods with ponds or streams nearby. Roost in hollow snags and bird nests.	Does not occur due to a lack of suitable habitat.
South coast marsh vole *Microtus californicus stephensi*	Federal: None State: SSC	Tidal marshes in Los Angeles, Orange and southern Ventura Counties.	Does not occur due to a lack of suitable habitat.
Southern California salt marsh shrew *Sorex ornatus salicornicus*	Federal: None State: SSC	Coastal marshes in Los Angeles, Orange and southern Ventura Counties. Requires dense vegetation and woody debris for cover.	Does not occur due to a lack of suitable habitat.
Western mastiff bat *Eumops perotis californicus*	Federal: None State: SSC WBWG: H	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees, & tunnels.	Does not occur due to a lack of suitable habitat.

STATUS

Federal
FE – Federally Endangered
FT – Federally Threatened
FPT – Federally Proposed Threatened
FC – Federal Candidate

State
SE – State Endangered
ST – State Threatened
SC– State Candidate
FP – State Fully-Protected Species
SSC – Species of Special Concern
WL – Watch List

Western Bat Working Group (WBWG)
H – High Priority
LM – Low-Medium Priority
M – Medium Priority
MH – Medium-High Priority

OCCURRENCE

- Does not occur – The site does not contain habitat for the species and/or the site does not occur within the geographic range of the species.
- Confirmed absent – The site contains suitable habitat for the species, but the species has been confirmed absent through focused surveys.
- Not expected to occur – The species is not expected to occur onsite due to low habitat quality, however future occurrence cannot be ruled out.
- Potential to occur – The species has a potential to occur based on suitable habitat, however its presence/absence has not been confirmed.
- Confirmed present – The species was detected onsite incidentally or through focused surveys

4.5.1 Special-Status Wildlife Species Observed within the Study Area

Least Bell's Vireo (*Vireo bellii pusillis*) is a state and federally listed endangered songbird that is a summer resident of southern California riparian habitats. This species was detected during biological surveys within the 100-foot buffer portion of the Study Area that extends into the off-site water quality basin to the immediate east of the Study Area. The basin is not part of the Hellman Property, but rather collects runoff from the adjacent Heron Pointe development. Two individual males were detected by vocalization on July 29, August 4, and August 25, 2022.

The Project site and Study Area outside of the water quality basin do not support any riparian habitat suitable for least Bell's vireo, and this species does not occur within the Project site.

4.5.2 Special-Status Wildlife Species Not Observed but Known to Historically Occur in the Immediate Vicinity of the Study Area

Burrowing Owl (*Athene cunicularia*) is a ground-dwelling and ground-nesting bird of prey that inhabits grassy fields, salt marshes, and other areas with flat or gentle topography with moderate to sparse cover. It does not excavate its own burrows, but rather uses rodent burrows and man-made structures such as culverts and pipes. Numerous rodent burrows were detected on the Hellman Property during past surveys; a wintering burrowing owl 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 occurrence cannot be ruled out.

4.5.3 Special-Status Wildlife Species Not Observed During Focused Surveys at the Project Site

Wandering Skipper (*Panoquina errans*) is a butterfly species with no state or federal status but is listed as "near threatened" by the International Union for the Conservation of Nature (IUCN).[9] The largest known colony of this species is located at Upper Newport Bay in Orange County. This species occurs in coastal salt marshes of southern California, where it uses saltgrass (*Distichlis spicata*) as a larval host plant. This species likely occurs in the Los Cerritos Wetlands south of the Hellman Property.

No wandering skipper individuals were detected during focused surveys of the Study Area; and this species is not expected to occur in the future based on lack of detection and the disturbed condition of the Study Area, including a low abundance of nectar plants in close proximity to salt grass.

4.5.4 Special-Status Wildlife Species that Occur in the Vicinity of the Study Area

Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) is state listed as endangered and inhabits coastal salt marshes from Santa Barbara south through San Diego County. Belding's Savannah sparrow nests in pickleweed on and around margins of tidal flats. No suitable habitat occurs within the Study Area. Three individuals were detected in pickleweed habitat during surveys conducted by GLA in 1996 in a former area of the Hellman Property that is now owned by Los Cerritos Wetland Authority (LCWA). At that time, it was concluded that the individuals were transient non-resident individuals. Surveys conducted in April 2015 by Richard Zembal identified 36 territories in portions of the Los Cerritos marsh that were previously part of the Hellman Property (Zembal et al. 2015).

Loggerhead shrike (*Lanius ludovicianus*) is an SSC but is a common resident and winter visitor in lowlands throughout California. Loggerhead shrikes prefer open habitats with scattered shrubs, trees, posts, fences, utility lines, and other perches and will eat mostly large insects, but will also take small birds, mammals, amphibians, reptiles, fish, carrion, and various other invertebrates. Shrikes usually fly directly to prey on ground or in a shrub; sometimes hovering. Occasionally it will hawk aerial insects in mid-air. This species was previously observed perching but not actively foraging in the Hellman Property southwest of the Study Area.

Short-eared owl (*Asio flammeus*) is an SSC when nesting and is known from the nearby Los Cerritos Wetlands. This species nests on dry ground tucked amongst grasses and low vegetation,

[9] See http://www.iucnredlist.org

including salt marsh vegetation. This species has not been observed within the Study Area, but it has low potential to occur for foraging only.

4.5.5 Raptor Use

The Study Area provides suitable foraging habitat for a number of raptor species, including special-status raptors.

GLA previously conducted detailed raptor surveys, including foraging studies, on the Hellman Property, encompassing the present Study Area (Glenn Lukos Associates 2001). The following raptors were identified during raptor surveys or general biological surveys conducted for the 1997 Draft Environmental Impact Report for the Hellman Property: red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), white-tailed kite (*Elanus leucurus*), Cooper's hawk (*Accipiter cooperi*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), osprey (*Pandion haliaetus*), and turkey vulture (*Cathartes aura*). Also detected was loggerhead shrike (*Lanius ludovicianus*), which is a songbird that hunts like a raptor. The American kestrel, loggerhead shrike, and red-tailed hawk in particular comprise the three dominant raptor or raptor-like species observed on the Hellman Property. Surveys in 2001 for the Tank Farm Relocation site, which is immediately south of the present Study Area, identified loggerhead shrike and American kestrel.[10] During surveys for the present Project, two raptor species, red-tailed hawk and American kestrel, were identified perching near or flying over the Study Area. Two other species, ferruginous hawk (*Buteo regalis*) and merlin (*Falco columbarius*), also have low potential to occur for foraging only.

The Study Area lacks potential nesting habitat (e.g., mature trees, shrubs) for those raptor species that breed in southern California, but is expected to provide foraging habitat for all of these species in the form of insects, spiders, lizards, snakes, small mammals, and other birds.

4.6 Nesting Birds

The Project site contains trees, shrubs, and ground cover that provide suitable habitat for nesting native birds. Mortality of native birds (including eggs) is prohibited under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code.[11]

4.7 Wildlife Linkages/ Corridors and Nursery Sites

Habitat linkages are areas which provide a connection between two or more habitat areas which are often larger or superior in quality to the linkage. Such linkage sites can be quite small or constricted, but may can be vital to the long-term health of connected habitats. Linkage values

[10] There was one occurrence each of a perching loggerhead shrike and perching American kestrel. No foraging was detected within the proposed Tank Farm Relocation site.

[11] The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R.21). In addition, Sections 3505, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs.

are often addressed in terms of "gene flow" between populations, with movement taking potentially many generations.

Corridors are similar to linkages but provide specific opportunities for individual animals to disperse or migrate between areas, generally extensive but otherwise partially or wholly separated regions. Adequate cover and tolerably low levels of disturbance are common requirements for corridors. Habitat in corridors may be quite different than that in the connected areas, but if used by the wildlife species of interest, the corridor will still function as desired.

Wildlife nurseries are sites where wildlife concentrate for hatching and/or raising young, such as rookeries, spawning areas, and bat colonies. Nurseries can be important to both special-status species as well as commonly occurring species.

The Project site is located in an area with a patchwork of urban development and undeveloped open space, with residential development to the south and east, and commercial development to the northeast. The undeveloped areas are associated with the Los Cerritos wetlands complex to the south and northwest, the Seal Beach Naval Weapons Station, and Seal Beach National Wildlife Refuge to the east and southeast, and the Los Alamitos Retarding Basin to the north. The Haynes Intake Channel and San Gabriel River are located to the northwest.

The Study Area may provide for local movement between the undeveloped areas discussed above for common, urban-adapted mammal species such as coyote, striped skunk, raccoon, and opossum. However, the Study Area is not located within a regionally significant wildlife linkage or corridor.

The Study Area does not contain any wildlife nursery habitat.

4.8 Critical Habitat

The Study Area is not located within any USFWS designated or proposed critical habitat areas.

4.9 Jurisdictional Waters

The Project site does not contain any jurisdictional waters that would be regulated by the Corps, Regional Board, or CDFW.

The Project site does not contain any wetlands that would be regulated by the CCC as defined by the California Coastal Act. The 100-foot buffer portion of the Study Area includes part of the Heron Pointe water quality basin that supports riparian vegetation and may have indicators of wetland hydrology and hydric soils; however, it was not evaluated for this Project [Appendix C – Jurisdictional Delineation Report].

5.0 IMPACT ANALYSIS

The following discussion examines the potential impacts to plant and wildlife resources that would occur as a result of the proposed project. Impacts (or effects) can occur in two forms, direct and indirect. Direct impacts are considered to be those that involve the loss, modification, or disturbance of plant communities, which in turn, directly affect the flora and fauna of those habitats. Direct impacts also include the destruction of individual plants or animals, which may also directly affect regional population numbers of a species or result in the physical isolation of populations thereby reducing genetic diversity and population stability.

Indirect impacts pertain to those impacts that result in a change to the physical environment, but which is not immediately related to a project. Indirect (or secondary) impacts are those that are reasonably foreseeable and caused by a project but occur at a different time or place. Indirect impacts can occur at the urban/wildland interface of projects, to biological resources located downstream from projects, and other offsite areas where the effects of the project may be experienced by plants and wildlife. Examples of indirect impacts include the effects of increases in ambient levels of noise or light; predation by domestic pets; competition with exotic plants and animals; introduction of toxics, including pesticides; and other human disturbances such as hiking, off-road vehicle use, unauthorized dumping, etc. Indirect impacts are often attributed to the subsequent day-to-day activities associated with project build-out, such as increased noise, the use of artificial light sources, and invasive ornamental plantings that may encroach into native areas. Indirect effects may be both short-term and long-term in their duration. These impacts are commonly referred to as "edge effects" and may result in a slow replacement of native plants by non-native invasive species, as well as changes in the behavioral patterns of wildlife and reduced wildlife diversity and abundance in habitats adjacent to project sites.

5.1 California Environmental Quality Act (CEQA)

5.1.1 Thresholds of Significance

Environmental impacts to biological resources are assessed using impact significance threshold criteria, which reflect the policy statement contained in CEQA, Section 21001(c) of the California Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the State of California:

> *"Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities..."*

Determining whether a project may have a significant effect, or impact, plays a critical role in the CEQA process. According to CEQA, Section 15064.7 (Thresholds of Significance), each public agency is encouraged to develop and adopt (by ordinance, resolution, rule, or regulation) thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the

effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. In the development of thresholds of significance for impacts to biological resources CEQA provides guidance primarily in Section 15065, Mandatory Findings of Significance, and the CEQA Guidelines, Appendix G, Environmental Checklist Form. Section 15065(a) states that a project may have a significant effect where:

> *"The project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or wildlife community, reduce the number or restrict the range of an endangered, rare, or threatened species..."*

Therefore, for the purpose of this analysis, impacts to biological resources are considered potentially significant (before considering offsetting mitigation measures) if one or more of the following criteria discussed below would result from implementation of the proposed project.

5.1.2 Criteria for Determining Significance Pursuant to CEQA

Appendix G of the 2018 State CEQA guidelines indicate that a project may be deemed to have a significant effect on the environment if the project is likely to:

> *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 Game or U.S. Fish and Wildlife Service.*
>
> *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 Game 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.*

5.2 Special-Status Species

Appendix G(a) of the CEQA guidelines asks if a project is likely to "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 Game or U.S. Fish and Wildlife Service."

5.2.1 Special-Status Plants

The proposed Project will impact one special-status plant species, southern tarplant [Exhibit 9 – Special-Status Species Impact Map].

Southern Tarplant

A population of 1,072 southern tarplant individuals was detected within the 12.46-acre Study Area, of which 457 tarplant individuals were detected in areas subject to ongoing fuel modification, and 615 individuals were not in existing fuel modification zones).[12] Of the 615 individuals not located within existing fuel modification zones, 57 individuals would be subject to temporary impacts and 26 individuals would be permanently impacted by the proposed Project.

In the Project site, southern tarplant occurs in highly disturbed areas with a predominance of non-native species, at the edges of dirt roads, and on bare ground.

Southern tarplant is highly adapted to disturbance as evidenced by the occurrence of this species within the disturbed portions of the Study Area. However, the loss of 83 individuals in the temporary and permanent impact areas, which totals 13 percent of the population in the Study Area not subject to ongoing fuel modification, would be considered a significant impact under CEQA. A mitigation measure is included in Section 6.0 of this report that reduces impacts to southern tarplant to less than significant. The remaining tarplant in the Study Area will be avoided by the Project. A measure is included in Section 6.0 of this report to ensure avoidance of southern tarplant outside the Project impact area during construction.

With regards to potential 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.

When making a determination of ESHA for a rare plant population, the CCC considers multiple parameters including the number of individuals, size of the area occupied, degree of isolation,

[12] The 457 southern tarplant individuals in ongoing fuel modification zones are not included in the impact totals for this Project as they are located in areas subject to periodic maintenance as part of oil field operations. Impacts to southern tarplant in the fuel modification zones occurs periodically and is not related to the project evaluated by this biological technical report.

fragmentation, and connectivity to suitable open space for the species, level of disturbance/degradation of the occupied area, adjacent development, level of invasion by non-native species, and potential jeopardy to regional populations by loss of the subject population. Coastal Commission Staff Senior Ecologist Jonna Engel previously evaluated southern tarplant populations for potential ESHA at several of the Synergy Oil consolidation sites in Long Beach, California, located a short distance from the Study Area. Dr. Engel determined that some of the southern tarplant subpopulations in areas of existing oil infrastructure did not rise to the level of ESHA based on the degree of disturbance, poor soils, and habitat fragmentation (Engel 2017).

Southern tarplant often occurs in areas that are highly disturbed and do not support native vegetation, such as cracks in concrete, disturbed roadsides, and areas with a gravel substrate. It can also occur with non-native halophytes such as small-flowered iceplant. Accordingly, as acknowledged by Dr. Engel in the above-referenced memorandum, a determination of ESHA for areas occupied by this species does not depend solely on the presence of southern tarplant. Rather, the determination should consider the size and area of the population, isolation/fragmentation, degree of disturbance, and other parameters listed above.

Overall, the western portion of the Study Area that supports southern tarplant consists of a disturbed open field and active oil extraction facilities, including active wells, oil field infrastructure, staging and equipment storage areas, and associated fuel modification areas within a mosaic of non-native vegetation. Where southern tarplant occurs in the Project site, the predominant vegetation/land-cover types consist of disturbed habitat that either lacks a state rarity rank (Disturbed/Developed, Annual grassland/Herbaceous Semi-Natural Stands) or has a state rarity ranking greater than S3 and have a substantial component of non-native grasses and forbs (*Distichlis spicata*–Annual Grasses, S4). Given the highly disturbed nature of both the overall Study Area and the Project site where southern tarplant occurs, as well as the level of invasion by non-native species, the southern tarplant in the Study Area does not rise to the level of ESHA, and construction of the proposed Project would not directly affect or result in impacts to ESHA. It is also important to note that southern tarplant thrives in disturbed areas, and based on GLA's experience, grows easily in an appropriately prepared restoration site. With the mitigation proposed in Section 6.3 below, impacts to southern tarplant in the Project site would not result in potential jeopardy to the regional population.

Coulter's Goldfields

Three distinct population clusters of Coulter's goldfields were mapped during surveys in 2023 and are located a minimum of 36 to 78 feet from the temporary project impact areas [Exhibit 9]. The Coulter's goldfields will be fully avoided by the proposed Project. A measure is included in Section 6.0 of this report to ensure avoidance of Coulter's goldfields during construction.

5.2.2 Special-Status Animals

The proposed Project will not impact special-status animals [Exhibit 9 – Special-Status Species Impact Map]. Least Bell's vireo (FE, SE) occurs in the Heron Pointe water quality basin on the east end of the Study Area; however, the proposed Project will not impact the riparian vegetation in the water quality basin.

A wintering burrowing owl (SSC) was observed on the Hellman Property in 1996 and 1997. No burrowing owls, suitable structures or rodent burrows, or owl sign was observed during biological surveys for the proposed Project; therefore, no impacts to this species will occur as a result of development of the Project. Nevertheless, a measure is included in Section 6.0 of this report to ensure avoidance of impacts to burrowing owl.

Development of the proposed Project would preclude raptor foraging within the Project site; however, the permanent loss of 2.66 acres of raptor foraging area from the proposed Project would be less than significant given the extensive raptor foraging area immediately surrounding the Project site, including the remainder of the Hellman Property, the adjacent Los Cerritos Wetlands, and the Los Alamitos Retarding Basin.

5.3 Sensitive Vegetation Communities

Appendix G(a) of the CEQA guidelines asks if a project is likely to "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 Game or U.S. Fish and Wildlife Service."

The proposed Project would not impact or have a substantial adverse effect on riparian vegetation or sensitive natural communities with a rarity rating of S3 or less. The proposed project would permanently impact approximately 2.66 acres of lands through installation of the solar panel array [Exhibit 6b – Vegetation Impact Map]. Of the 2.66 acres to be impacted, only a small portion of that area would be directly impacted through ground disturbance and vegetation removal. The majority of the impact area consists of the vegetated areas under and between the proposed solar panels. Shading from the proposed solar panels may result in loss of vegetation and diminished habitat value. Permanent impacts include approximately 0.04 acre of alkali heliotrope fields, 1.55 acre of *Bassia hyssopfolia* association, 1.05 acre of *Distichlis spicata*-annual grassland association, and 0.02 acre of tree tobacco stands. The Project will avoid the entirety of the 0.02 acre of *Cressa truxillensis* association (S2 rarity rating). The project will also avoid the riparian vegetation associated with the Heron Pointe water quality basin.

The proposed Project will temporarily impact 1.91 acres of lands, none of which consist of sensitive vegetation communities, for trenching to bury utility lines and for temporary work and staging areas. The trenched areas will be restored to the original grade following construction and are expected to passively revegetate. Table 5-1 provides a summary of impacts to vegetation/land use types.

Table 5-1. Summary of Permanent and Temporary Vegetation/Land Use Impacts

VEGETATION/ LAND USE TYPE	Code	Rank	Permanent Impacts (acres)	Temporary Impacts (acres)	Avoided	Total Study Area (acres)
Alkali heliotrope fields	--	--	0.04	0.06	0.01	1.11
Annual grassland/ herbaceous semi-natural stands	--	--	0	0.02	1.18	1.20
Baccharis pilularis shrubland alliance	32.060.23	S5	0	0.04	0.01	0.05

VEGETATION/ LAND USE TYPE	Code	Rank	Permanent Impacts (acres)	Temporary Impacts (acres)	Avoided	Total Study Area (acres)
Disturbed *Baccharis pilularis* shrubland alliance	63.510.00	S5	0	0	0.35	0.35
Bassia hyssopifolia association	42.015.02	--	1.55	0.88	1.11	3.54
Castor bean stands	--	--	0	0.03	0.02	0.05
Cressa truxillensis-Distichlis spicata herbaceous alliance	46.100.09	S2	0	0	0.20	0.20
Distichlis spicata – annual grasses	41.200.13	S4	1.05	0.61	1.57	3.23
Disturbed/Developed	--	--	0	0.22	2.29	2.51
Malvella leprosa fields	--	--	0	0	0.11	0.11
Mixed shrub seminatural stands	--	--	0	0	0.04	0.04
Ornamental	--	--	0	0	0.01	0.01
Raphanus sativus association	--	--	0	0	0.18	0.18
Salix lasiolepis – Baccharis salicifolia shrubland alliance	61.201.06	S4	0	0	0.58	0.58
Tree tobacco stands	--	--	0.02	0.05	0.20	0.27
Total			2.66	1.91	7.89	12.46

5.4 Wetlands

Appendix G(c) of the State CEQA guidelines asks if a project is likely to "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."

The Project site does not contain and will not impact any state or federally protected wetlands, including wetlands as defined under the CCA.

5.5 Wildlife Movement and Native Wildlife Nursery Sites

Appendix G(d) of the State CEQA guidelines asks if a project is likely to "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."

The Study Area is not located within a regionally significant wildlife linkage or corridor. Additionally, the development of the Project would not preclude the movement of wildlife through the Study Area. Thus, the proposed Project would not result in a significant impact to native resident or migratory wildlife corridors.

The Study Area does not contain any wildlife nursery sites.

The project has the potential to impact active bird nests if vegetation is removed during the nesting season (February 1 to September 15). Impacts to nesting birds are prohibited by the MBTA and California Fish and Game Code.

Although impacts to native birds are prohibited by MBTA and similar provisions of California Fish and Game Code, impacts to native birds by the proposed Project would not be a significant impact under CEQA. The native birds with potential to nest on the Project site would be those that are extremely common to the region and highly adapted to human landscapes (e.g., house finch, killdeer). The number of individuals potentially affected by the Project would not significantly affect regional, let alone local populations of such species. A measure is identified in Section 6.0 of this report to avoid impacts to nesting birds.

5.6 Local Policies or Ordinances

Appendix G(e) of the State CEQA guidelines asks if a project is likely to "conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance." The Project will not conflict with any local policies or ordinances protecting biological resources.

5.7 Habitat Conservation Plans

Appendix G(f) of the State CEQA guidelines asks if a project is likely to "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 Study Area is not located within or subject to the provisions of any habitat conservation plans.

5.8 Jurisdictional Waters

The Project site does not contain and will not impact any jurisdictional waters.

5.9 Indirect Impacts to Biological Resources

In the context of biological resources, indirect effects are those effects associated with developing areas adjacent to native open space.

The Project is not expected to result in significant indirect impacts to special-status biological resources. The operation of the proposed solar panel array inherently lacks many potential sources of indirect impacts, including drainage, toxic materials, lighting, noise, and invasive species. To minimize temporary edge effects potentially associated with construction, Project will implement measure to address the following:

- Drainage
- Toxics
- Lighting

- Noise
- Human Use

5.9.1 Drainage

The Project's contractor will develop a Stormwater Pollution Prevention Plan (SWPPP) to address runoff and water quality during construction. Following the completion of construction activities, the Project area will not contain any developed or paved areas and will not result in drainage to the surrounding area. As such, no measures would be required post-construction.

5.9.2 Toxics

Land uses that use chemicals or generate bioproducts that are potentially toxic may adversely affect wildlife species, habitat, or water quality. The proposed Project will implement a SWPPP that will address runoff during construction.

5.9.3 Lighting

No night lighting will be associated with the proposed Project. If temporary night lighting is required during construction, shielding shall be incorporated to ensure ambient lighting is not increased, and such lighting will be subject to the approval of the project biologist.

5.9.4 Noise

It is anticipated that noise levels from installation of solar panels will generally not exceed ambient noise levels associated with normal oil field operations, although there may be a temporary, unavoidable increase in noise levels during construction; however, noise will be minimized to the greatest extent practicable. The City's standard construction regulations require all construction vehicles or equipment, fixed or mobile, to be equipped with properly operating and maintained mufflers to minimize noise. Furthermore, construction is limited to the hours of 7:00 a.m. to 8:00 p.m. on weekdays and 8:00 a.m. to 8:00 p.m. on weekends. Nevertheless, to ensure that there are no significant temporary noise impacts to least Bell's vireo in the Heron Pointe water quality basin during breeding season (March 15 to September 15), a measure is identified in Section 6.0 of this report. There would be no other significant temporary or permanent noise impacts resulting from the proposed project.

No noise is associated with operation of the proposed Project.

5.9.5 Human Use

Currently, on-site human use is limited to employees tending to oil field operations. Typically, less than five people are on site at any given time. There will be no change in post-construction human use associated with the proposed project, as the solar array does not require any additional personnel except for periodic maintenance. The property will remain private and fenced, so there is no possibility of increased public access to the property. The proposed project would therefore not cause any significant human impacts.

6.0 MITIGATION/AVOIDANCE MEASURES

The following discussion provides project-specific mitigation/avoidance measures for actual or potential impacts to special-status resources.

6.1 Nesting Birds

The Project site contains vegetation with the potential to support native nesting birds. As discussed above, the California Fish and Game Code prohibits mortality of native birds, including eggs. The following measure is recommended to avoid mortality to nesting birds. Potential impacts to native birds were not considered a biologically significant impact under CEQA; however to comply with state law, the following is recommended:

- As feasible, vegetation clearing and ground disturbance should be conducted outside of the nesting season, which is generally identified as February 1 through September 15. If avoidance of the nesting season is not feasible, then a qualified biologist shall conduct a nesting bird survey within three days prior to any disturbance of the site, including vegetation clearing and ground disturbance. If active nests are identified, the biologist shall establish suitable buffers around the nests, and the buffer areas shall be avoided until the nests are no longer occupied and the juvenile birds can survive independently from the nests.

6.2 Burrowing Owl

Although no burrowing owls, suitable burrows, or owl sign were detected during general biological surveys, wintering owls have historically occurred on the Hellman Property. Although unlikely, owls may occupy the site between the time of biological surveys and construction activities. Therefore, the following required actions would ensure compliance with the MBTA and California Fish and Game Code.

- 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.

6.3 Special-Status Plants

As noted above, the proposed Project will result in the loss of 83 individuals of southern tarplant, including 26 individuals in the permanent impact area and 57 individuals in the temporary impact area occupying approximately 0.03 acre. The following measure identifies mitigation for

impacts to southern tarplant as discussed in the Southern Tarplant Mitigation and Monitoring Plan [Appendix D]:

- Prior to impacts to the southern tarplant in the Project site, the project biologist will implement the measures contained in the Southern Tarplant Mitigation and Monitoring Plan, 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 are implemented as outlined in the measure below and the total numbers of impacted individuals changes, the number 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.

The proposed Project is located within 36–78 feet of Coulter's goldfields populations in the Study Area. To ensure full avoidance of Coulter's goldfields, the following measure shall be implemented:

- Prior to the initiation of construction activities and under the direction of the Project Biologist, the populations of Coulter's goldfields in proximity to the Project site will 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.

The proposed Project is located immediately adjacent to some areas of avoided southern tarplant in the Study Area. To ensure full avoidance of southern tarplant outside of the impact area, the following measure shall be implemented:

- Prior to the initiation of construction activities and under the direction of the Project Biologist, any southern tarplant within 100 feet of the Project site will be demarcated with construction fencing or flagging. No vegetation clearing, ground disturbance, or other construction activities shall occur in the fenced areas.

The distribution of southern tarplant and Coulter's goldfields in the Study Area and Project site is well understood based upon multiple years of focused survey data. However, the number and distribution of individuals may vary from year to year. Based on existing survey data, the project is expected to impact southern tarplant but not Coulter's goldfields. To ensure that impacts are fully mitigated, the following measure shall be implemented:

- Prior to the initiation of construction activities, a qualified biologist shall conduct pre-construction surveys for southern tarplant and Coulter's goldfields during the appropriate season for each species to determine final mitigation requirements. 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.

6.4 Least Bell's Vireo

Two individual least Bell's vireo were present in the Heron Pointe water quality basin adjacent to the Project site during the 2022 breeding season. No habitat for least Bell's vireo, including in the Heron Pointe water quality basin, will be impacted by the Proposed project; however, to avoid indirect noise impacts to breeding least Bell's vireo, the following measures will be implemented in consultation with the City of Seal Beach and USFWS if project construction activities will occur between March 15 and September 15:

- Surveys for least Bell's vireo should be conducted pursuant to the recommended protocol survey guidelines as established by the USFWS. If full protocol surveys cannot be conducted, then a qualified biologist shall survey suitable habitat in the Heron Pointe water quality bason for the least Bell's vireo weekly for a minimum of four weeks (within the breeding season) prior to the commencement of any construction.

- If least Bell's vireo is detected during surveys, and construction activities will occur between March 15 and September 15, the least Bell's vireo breeding season, an analysis showing that noise generated by construction activities would not exceed 60 dB hourly average at the edge of occupied habitat must be completed by a qualified acoustician prior to commencement of construction activities. Where construction activities would result in noise levels exceeding 60 dB hourly average at the edge of occupied least Bell's vireo habitat, additional measures must be implemented.

- At least two weeks prior to commencement of construction activities, under the direction of a qualified acoustician, noise attenuation measures (e.g., walls, panels) shall be implemented to ensure that noise levels resulting from construction activities will not exceed 60 dB hourly average at the edge of habitat occupied by least Bell's vireo. Concurrent with the commencement of construction activities and the construction of necessary noise attenuation facilities, noise monitoring shall be conducted at the edge of the occupied habitat area to ensure that noise levels do not exceed 60dB hourly average. If the noise attenuation techniques implemented are determined to be inadequate by the qualified acoustician or biologist, then construction activities shall cease until such time that adequate noise attenuation is achieved or until the end of the breeding season (September 16). Construction noise monitoring shall continue to be monitored at least once weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 dB hourly average or to the ambient noise level if it already exceeds 60 dB hourly average. If not, other measures shall be implemented in consultation with the project biologist and the City and USFWS, as necessary, to reduce noise levels to below 60 dB hourly average or to the ambient noise level if it already exceeds 60 dB hourly average. Such measures include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.

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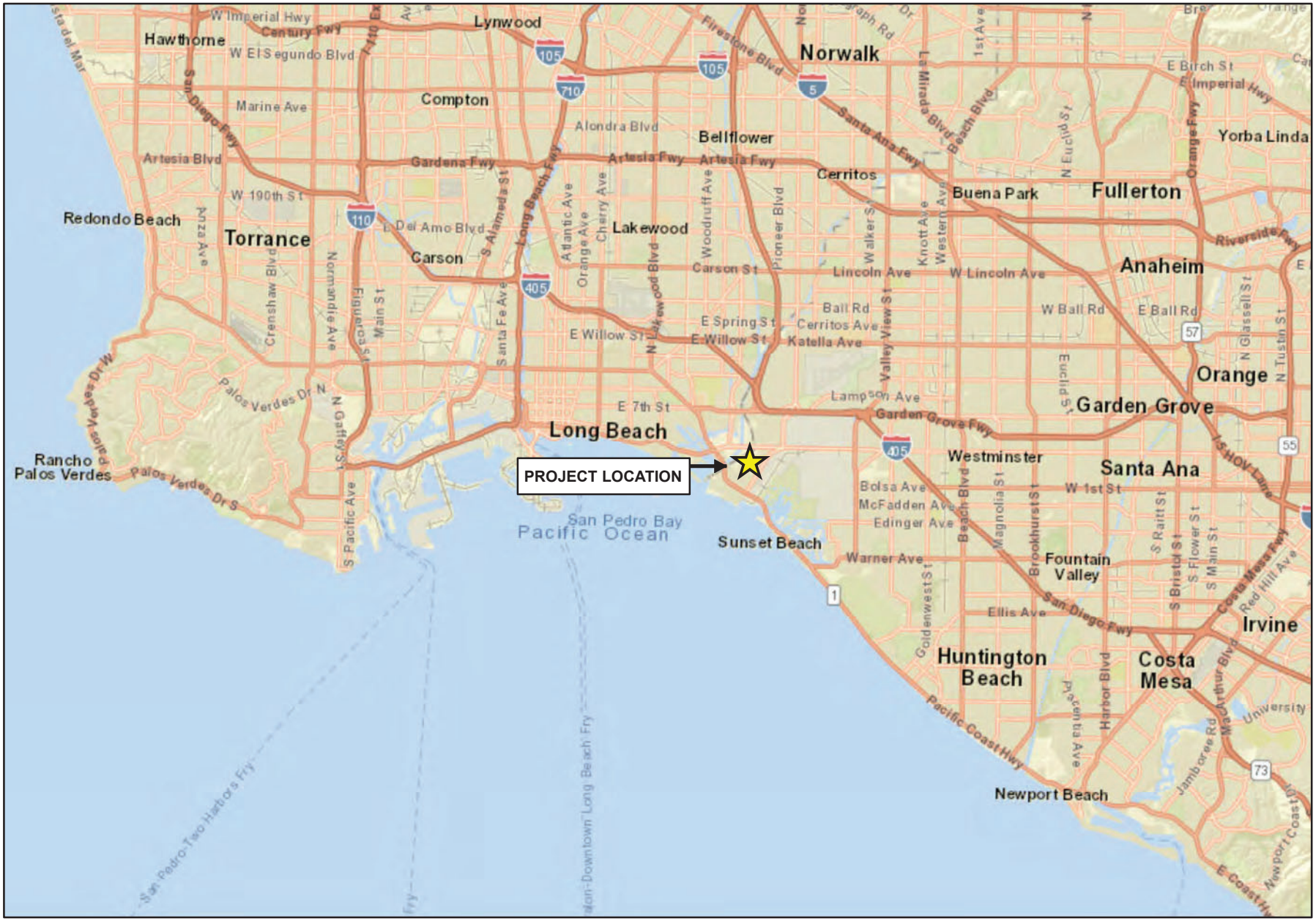
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8.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Signed: Tony Bowlus Date: October 12, 2023

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Source: ESRI World Street Map

N

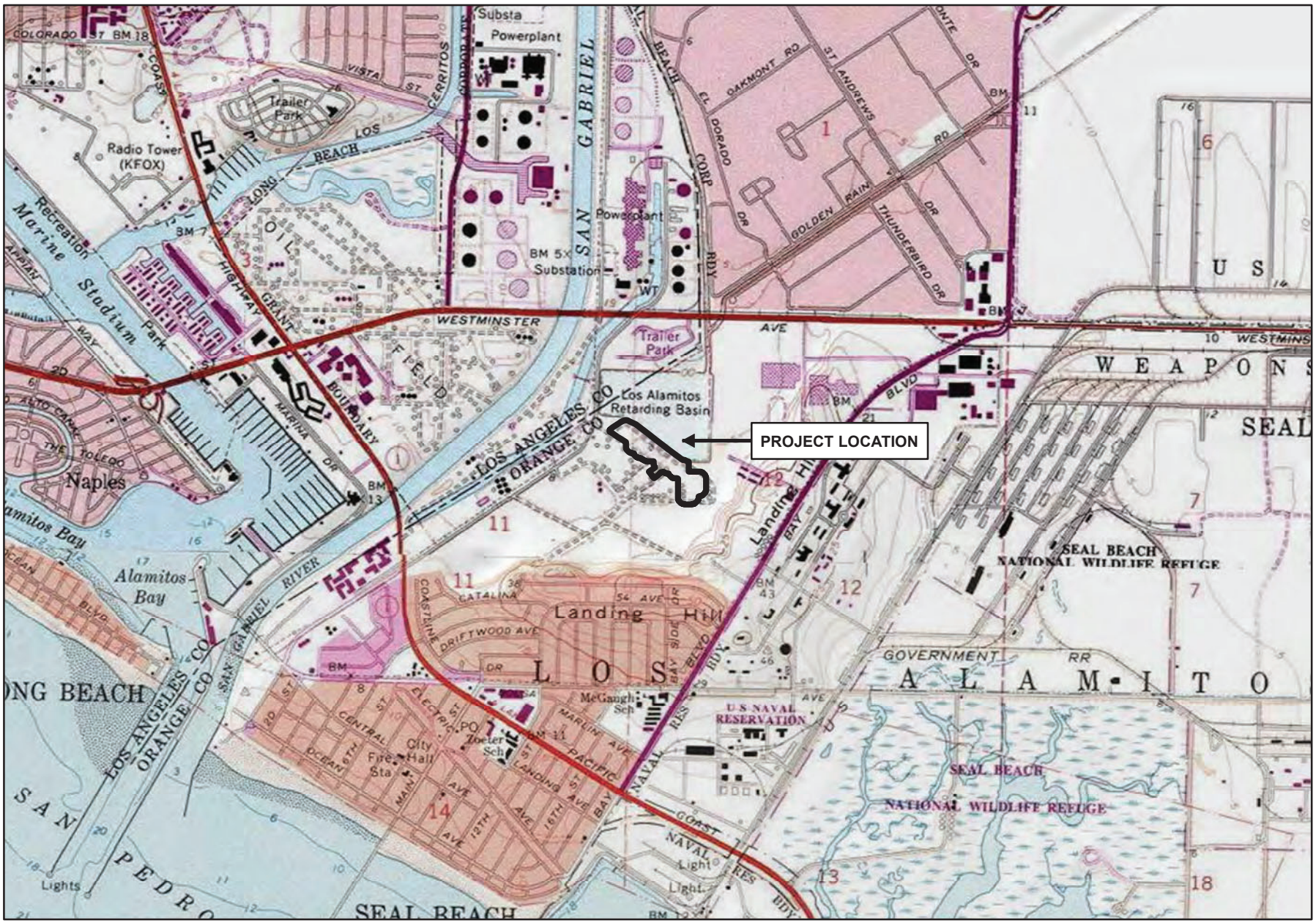
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HELLMAN PROPERTY
SOLAR PANEL ARRAY

Regional Map

GLENN LUKOS ASSOCIATES

Exhibit 1



Adapted from USGS Los Alamitos, CA quadrangle

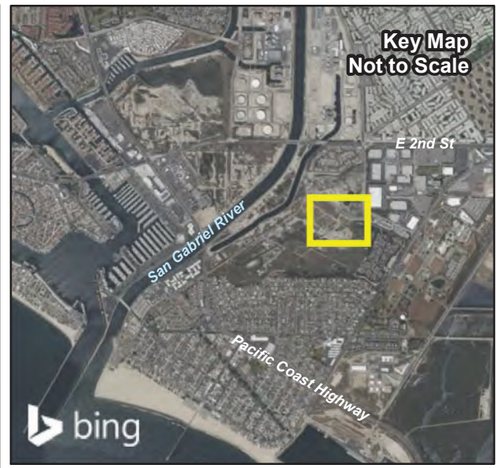
HELLMAN PROPERTY
SOLAR PANEL ARRAY

Vicinity Map

GLENN LUKOS ASSOCIATES

Exhibit 2





Study Area

Permanent Impacts

Temporary Impacts

100' Buffer of Permanent Impacts

N

0 62.5 125 250

Feet

1 inch = 125 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 4, 2023

HELLMAN PROPERTY SOLAR PANEL ARRAY

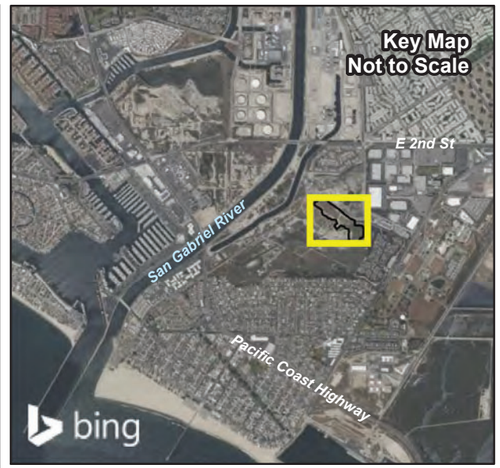
Site Plan

GLENN LUKOS ASSOCIATES

Exhibit 3

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Study Area

Western Field

Eastern Field

Heron Pointe
Water Quality Basin

Non-Wetland Ponded Area

Data Point

N

0 62.5 125 250

Feet

1 inch = 125 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 15, 2023

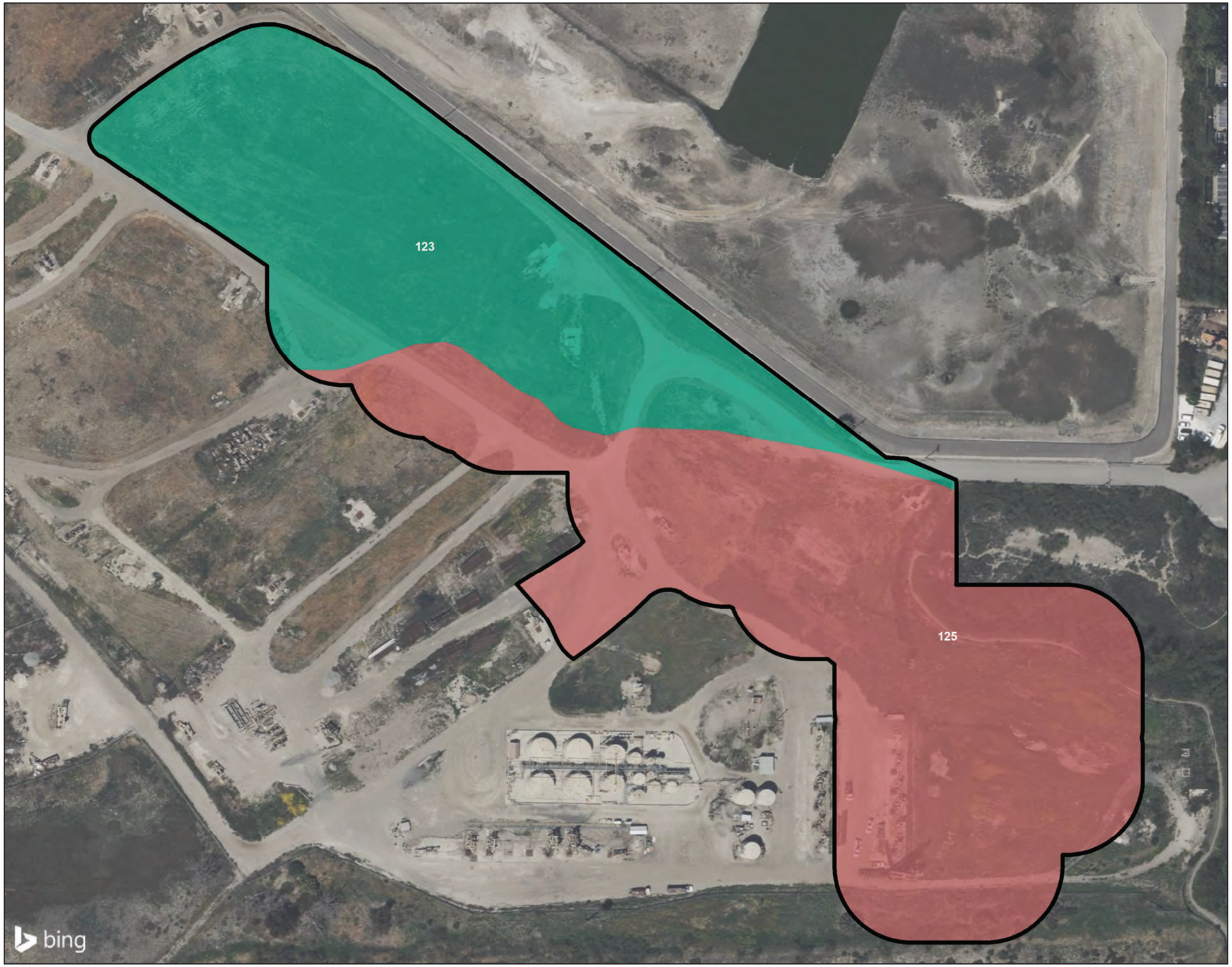
HELLMAN PROPERTY
SOLAR PANEL ARRAY

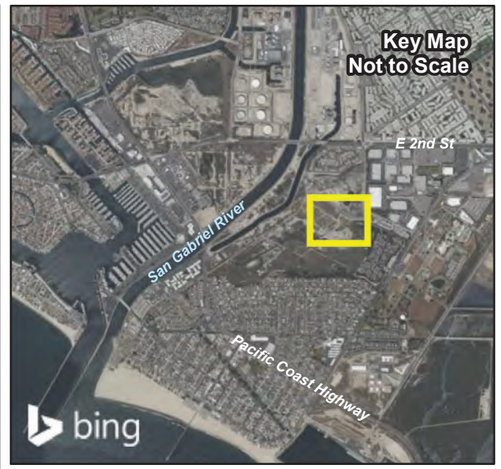
Jurisdictional Determination Map

GLENN LUKOS ASSOCIATES

Exhibit 4

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Study Area

123 Bolsa Silt Loam, Drained

125 Bolsa Silty Clay Loam, Drained

N

0 62.5 125 250

Feet

1 inch = 125 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 4, 2023

HELLMAN PROPERTY
SOLAR PANEL ARRAY

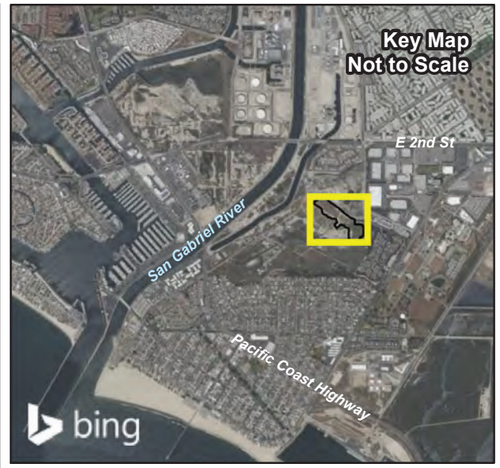
Soils Map

GLENN LUKOS ASSOCIATES

Exhibit 5

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Study Area

Existing
Fuel Modification Zones

N

0 62.5 125 250

Feet

1 inch = 125 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 28, 2023

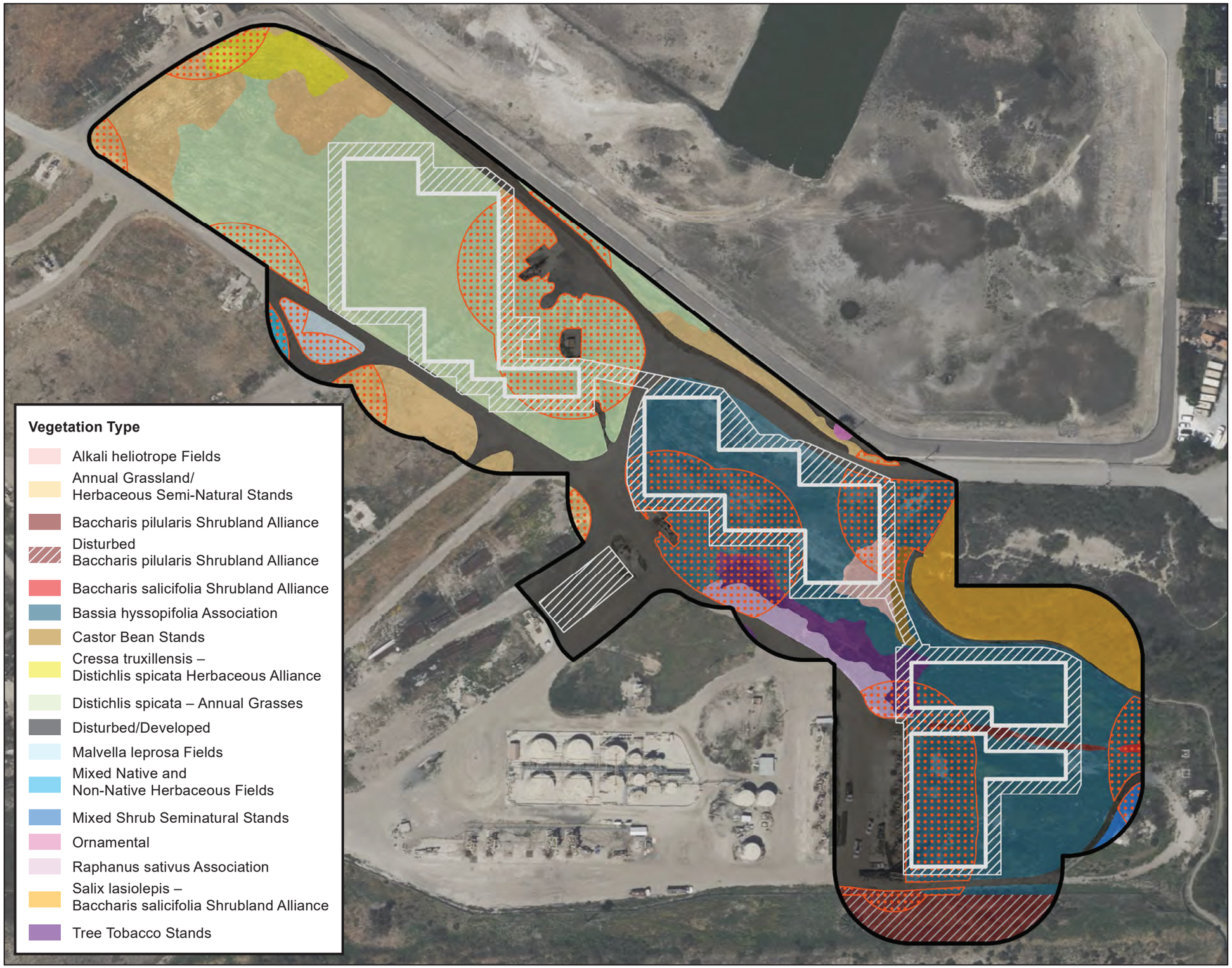
HELLMAN PROPERTY
SOLAR PANEL ARRAY

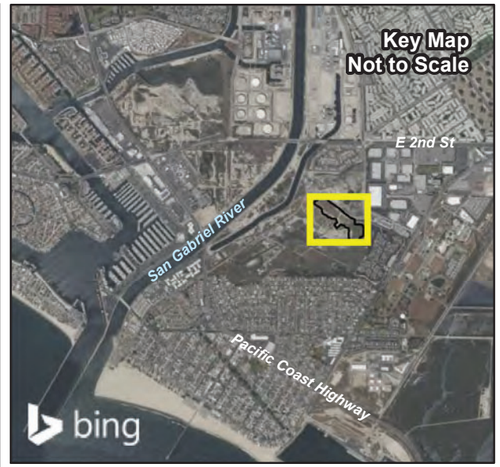
Vegetation Map

GLENN LUKOS ASSOCIATES

Exhibit 6A

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Study Area

Permanent Impacts

Temporary Impacts

Existing
Fuel Modification Zones

N

0 62.5 125 250

Feet

1 inch = 125 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 28, 2023

HELLMAN PROPERTY SOLAR PANEL ARRAY

Vegetation Impact Map

GLENN LUKOS ASSOCIATES

Exhibit 6B

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Photograph 1: West-facing view of easternmost area of the Project site. Note the high level of disturbance. Plant species in this area include alkali heliotrope, five-hook bassia, summer mustard, and perennial pepperweed. August 25, 2022.



Photograph 2: West-facing view of easternmost area of the Project site showing coyote brush growing along an oilfield pipeline. August 25, 2022.



Photograph 3:West-facing view of central portion of the Project site. Note the general lack of vegetation. August 25, 2022



Photograph 4: North-facing view of the easternmost portion of the Project site. The large patch of vegetation in the center of the photo is alkali heliotrope (*Heliotropium curassavicum*). August 25, 2022.



Photograph 5: West-facing view of western portion of the Project. This area is vegetated with the *Distichlis spicata*-annual grasses association, with a few small isolated patches of alkali heath (*Frankenia salina*) that do are not large enough to comprise a mapping unit. July 29, 2022.



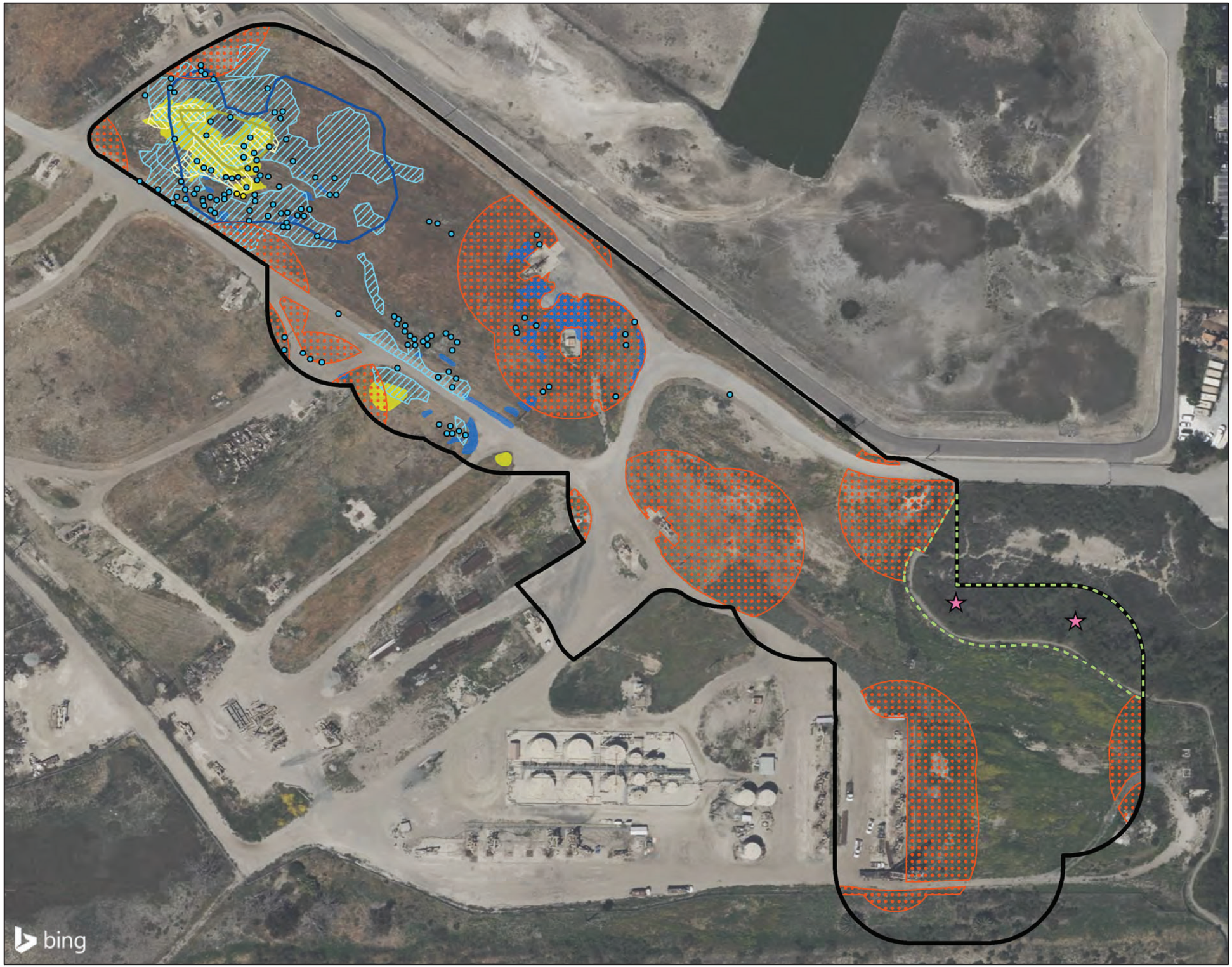
Photograph 6:View of *Cressa truxillensis* association in the northwest portion of the Study Area. This area will not be impacted by the proposed Project. August 25, 2022

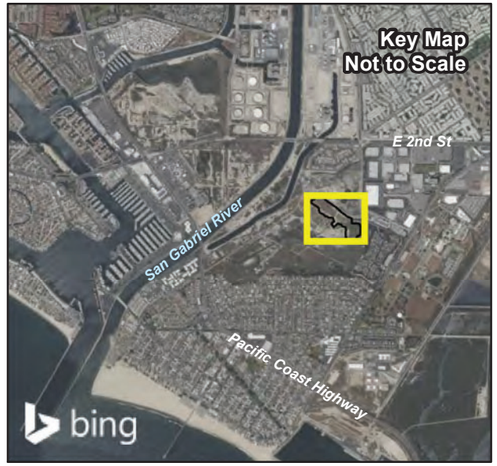


Photograph 7: Southern tarplant growing in the *Distichlis spicata* – annual grasses alliance in the westernmost portion of the Project site. Note the high level of disturbance and lack of vegetatative cover. July 29, 2022



Photograph 8: West-facing view of southern tarplant growing on the edge of a road. July 29, 2022





Study Area

Existing Fuel Modification Zones

Heron Pointe Water Quality Basin

Least Bell's Vireo Location

2009 Rare Plants

Coulter's Goldfields

Southern Tarplant

2010 Rare Plants

Coulter's Goldfields

Southern Tarplant

2022 Rare Plants

Southern Tarplant (1,072)

2023 Rare Plants

Coulter's Goldfields

0 62.5 125 250

Feet

1 inch = 125 feet

N

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 28, 2023

HELLMAN PROPERTY SOLAR PANEL ARRAY

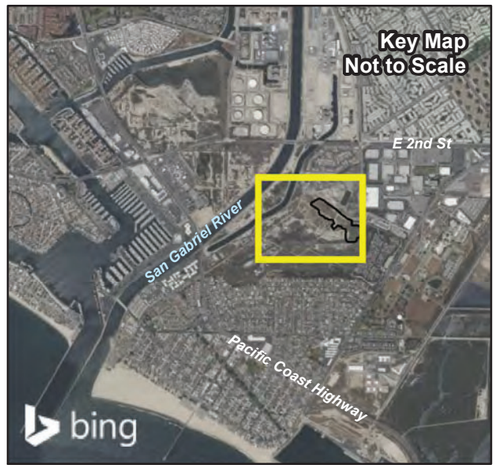
Special-Status Species Map

GLENN LUKOS ASSOCIATES

Exhibit 8A

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Study Area

Southern Tarplant (2022)

Historical Southern Tarplant (2006-2010)

0 112.5 225 450

Feet

1 inch = 225 feet

N

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 3, 2023

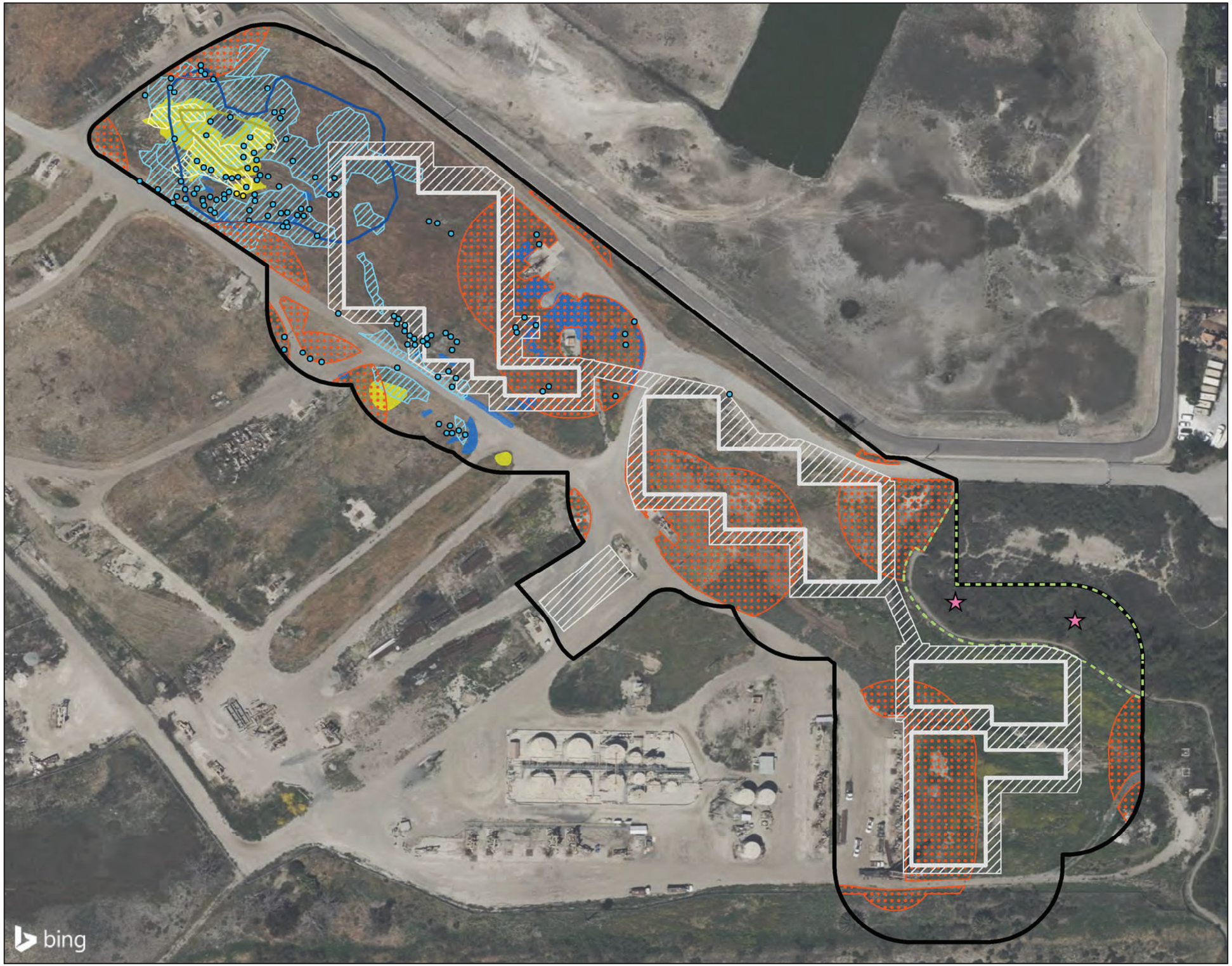
HELLMAN PROPERTY SOLAR PANEL ARRAY

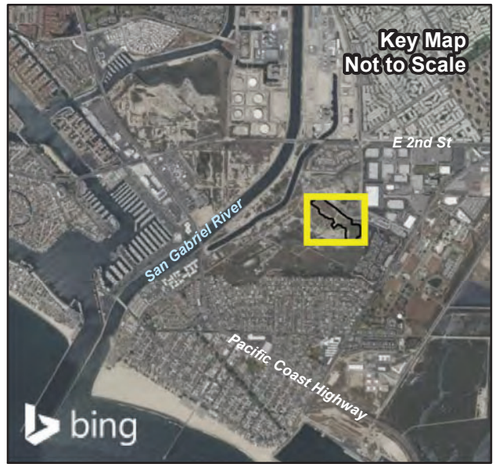
Southern Tarplant Locations Map

GLENN LUKOS ASSOCIATES

Exhibit 8B

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Study Area

Permanent Impacts

Temporary Impacts

Existing Fuel Modification Zones

Heron Pointe Water Quality Basin

Least Bell's Vireo Location

2009 Rare Plants

Coulter's Goldfields

Southern Tarplant

2010 Rare Plants

Coulter's Goldfields

Southern Tarplant

2022 Rare Plants: Southern Tarplant (1,072)

2023 Rare Plants: Coulter's Goldfields

0 62.5 125 250

Feet

1 inch = 125 feet

N

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 3, 2023

HELLMAN PROPERTY SOLAR PANEL ARRAY

Special-Status Species Impacts Map

GLENN LUKOS ASSOCIATES

Exhibit 9

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APPENDIX A

FLORAL COMPENDIUM

The floral compendium lists species identified within the Study Area. Taxonomy follows Jepson (Baldwin et al. 2012) and, for sensitive species, the California Native Plant Society's Rare Plant Online Inventory (CNPS 2022). Common names are taken from Baldwin et al. (2012), Munz (1974), and Roberts (1998). An asterisk (*) denotes a non-native species. Also included are species that were observed by GLA in the Study Area in previous years for other biological surveys on the Hellman Property.

SCIENTIFIC NAME	COMMON NAME
MONOCOTS	
ARACACEAE	**PALM FAMILY**
Phoenix canariensis	Canary Island date palm
EUDICOTS	
AMARANTHACEAE	**AMARANTH FAMILY**
**Amaranthus albus*	tumbling pigweed
ASTERACEAE	**SUNFLOWER FAMILY**
Baccharis pilularis	coyote brush
Baccharis salicifolia	mule fat
* *Centaurea melitensis*	tocalote
Centromadia parryi ssp. *australis*	southern tarplant
Conyza canadensis	common horseweed
* *Dittrichea graveolens*	stinkwort
* *Glebionis coronaria*	crown daisy
Helianthus annuus	western sunflower
Heterotheca grandiflora	telegraph weed
**Lactuca serriola*	prickly lettuce
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields
**Pulicaria paludosa*	Spanish sunflower
**Silybum marianum*	milk thistle
**Sonchus oleraceus*	common sow-thistle
Stephanomeria virgata ssp. *virgata*	tall wreath-plant
AIZOACEAE	**FIG-MARIGOLD FAMILY**
* *Mesembryanthemum crystallinum*	crystalline iceplant
BORAGINACEAE	**BORAGE FAMILY**
Heliotropium curassavicum	alkali heliotrope
BRASSICACEAE	**MUSTARD FAMILY**
* *Brassica nigra*	black mustard
* *Brassica rapa*	field mustard

* *Hirschfeldia incana*	summer mustard
* *Lepidium latifolium*	broad-leaved peppergrass
* *Raphanus sativus*	wild radish
* *Sisymbrium irio*	London rocket
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
* *Atriplex suberecta*	serrate-leaved saltbush
* *Bassia hyssopifolia*	five-hook bassia
* *Chenopodium album*	lamb's quarters
* *Salsola tragus*	Russian thistle
CONCOLVULACEAE	**MORNING GLORY FAMILY**
Cressa truxillensis	Alkali weed
EUPHORBIACEAE	**SPURGE FAMILY**
* *Ricinus communis*	castor bean
FABACEAE	**PEA FAMILY**
* *Melilotus albus*	white sweet clover
* *Melilotus indica*	yellow sweet clover
* *Medicago polymorpha*	bur-clover
FRANKENIACEAE	**FRANKENIA FAMILY**
Frankenia salina	alkali heath
GERANIACEAE	**GERANIUM FAMILY**
* *Erodium botrys*	long-beaked filaree
* *Erodium cicutarium*	red-stemmed filaree
* *Erodium moschatum*	white-stemmed filaree
LAMIACEAE	**MINT FAMILY**
* *Marrubium vulgare*	horehound
MALVACEAE	**MALLOW FAMILY**
* *Malva parviflora*	cheeseweed
Malvella leprosa	alkali-mallow
POACEAE	**GRASS FAMILY**
* *Cortaderia selloana*	pampas grass
Distichlis spicata	salt grass
* *Avena barbata*	slender wild oat
* *Bromus diandrus*	ripgut brome
* *Hordeum marinum* ssp. *gussoneanum*	Mediterranean barley
* *Hordeum murinum* ssp. *leporinum*	hare barley
* *Festuca perennis*	Italian rye grass

POLYGONACEAE	**BUCKWHEAT FAMILY**
* *Polygonum arenastrum*	common knotweed
* *Rumex crispus*	curly dock
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	jimsonweed
**Nicotiana glauca*	tree tobacco
URTICACEAE	**NETTLE FAMILY**
Urtica urens	annual stinging nettle

APPENDIX B

FAUNAL COMPENDIUM

The faunal compendium lists species that were either observed within or adjacent to the Study Area. Also included are species that were observed by GLA in previous years for other biological surveys on the Hellman Property. Taxonomy and common names are taken from AOS (2022) for birds; Collins and Taggart (2009) and CDFW (2016) for reptiles and amphibians; and CDFG (2016) for mammals. Also included are species that were observed by GLA in and around the Study Area in previous years for other biological surveys on the Hellman Property.

SCIENTIFIC NAME	COMMON NAME
BIRDS	
COLUMBIDAE	**PIGEONS AND DOVES**
Columbia livia	rock dove
Zenaida macroura	mourning dove
TROCHILIDAE	**HUMMINGBIRDS**
Calypte anna	Anna's hummingbird
Selasphorus sasin	Allen's hummingbird
CHARADRIIDAE	**PLOVERS AND RELATIVES**
Charadrius vociferus	killdeer
CATHARTIDAE	**NEW WORLD VULTURES**
Cathartes aura	turkey vulture
PANDIONIDAE	**OSPREYS**
Pandion haliaetus	Osprey
ACCIPITRIDAE	**HAWKS AND HARRIERS**
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
Circus cyaneus	northern harrier
Elanus leucurus	white-tailed kite
FALCONIDAE	**FALCONS**
Falco sparverius	American kestrel
TYRANNIDAE	**TYRANT FLYCATCHERS**
Sayornis nigricans	black phoebe
Sayornis saya	Say's phoebe
Tyrannus verticalis	western kingbird

LANIIDAE	**SHRIKES**
Lanius ludovicianus	loggerhead shrike
VIREONIDAE	**VIREOS AND RELATIVES**
Vireo bellii pusillis[1]	least Bell's vireo
CORVIDAE	**JAYS, MAGPIES, AND CROWS**
Corvus brachyrhynchos	American crow
Corvus corax	common raven
HIRUNDINIDAE	**SWALLOWS**
Hirundo rustica	barn swallow
MIMIDAE	**MOCKINGBIRDS AND TRASHERS**
Mimus polyglottos	northern mockingbird
STURNIDAE	**STARLINGS**
Sturnus vulgaris	European starling
PASSERELLIDAE	**NEW WORLD SPARROWS**
Passerculus sandwichensis	savannah sparrow
Melozone crissalis	California towhee
Zonotrichia leucophrys	white-crowned sparrow
FRINGILLIDAE	**FINCHES**
Carduelis psaltria	lesser goldfinch
Haemorhous mexicanus	house finch
MAMMALS	
GEOMYIDAE	**POCKET GOPHERS**
Thomomys bottae	Botta's pocket gopher
CANIDAE	**FOXES, WOLVES, AND RELATIVES**
Canis familiaris	feral dog
Canis latrans	coyote
PROCYONIDAE	**RACOONS**
Procyon lotor	raccoon

[1] Observed in the Heron Pointe Water Quality Basin only. Does not occur in the Project site.

APPENDIX C

GLENN LUKOS ASSOCIATES
Regulatory Services

October 11, 2023

Devon Shay
Business Manager
Hellman Properties LLC
P.O. Box 2398
Seal Beach, California 90740

SUBJECT: Jurisdictional Delineation for the 12.46-Acre Hellman Property Solar Panel Array Study Area, Seal Beach, Orange County, California

Dear Ms. Shay:

This letter report summarizes our preliminary findings of U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (Regional Board), California Department of Fish and Wildlife (CDFW) jurisdiction for the above-referenced property.[1] The report also addresses the potential presence of wetlands as defined under the California Coastal Act (CCA).

The Solar Panel Array Site (Project site) at the Hellman Property, Orange County [Exhibit 1] contains no blue-line streams as depicted on the U.S. Geological Survey (USGS) topographic map Los Alamitos, California [Exhibit 2]. On July 29, August 25, and October 25, 2022, and March 6, 2023, regulatory specialists of Glenn Lukos Associates, Inc. (GLA) examined the Project site and a 100-foot buffer area surrounding the Project site, which comprise a 12.46 acre Study Area, to determine the presence and limits of (1) Corps jurisdiction pursuant to Section 404 of the Clean Water Act (CWA), (2) Regional Board jurisdiction pursuant to Section 401 of the CWA and Section 13260 of the California Water Code (CWC), and (3) CDFW jurisdiction pursuant to Division 2, Chapter 6, Section 1600 of the Fish and Game Code. Enclosed is an 80-scale map [Exhibit 3] that depicts the areas evaluated for Corps, Regional Board and CDFW jurisdiction and wetlands defined by the CCA. A soil map is attached as Exhibit 4. For purposes of this report, the Study Area is separated into a western field and eastern field, which are depicted on Exhibit 3. Photographs to document the topography, vegetative communities, and areas evaluated for jurisdiction are provided as Exhibit 5. A map depicting the results of the National Wetland Inventory database search is enclosed as Exhibit 6. Data sheets are attached as Appendix A.

[1] This report presents our best effort at estimating the subject jurisdictional boundaries using the most up-to-date regulations, written policy, and guidance from the regulatory agencies. Only the regulatory agencies can make a final determination of jurisdictional boundaries.

There are no areas of Corps jurisdiction at the site, including wetlands as defined under Section 404 of the Clean Water Act.

There are no areas of Regional Board jurisdiction at the site, including wetlands as defined under the Porter Cologne Act as set forth in the State Board Wetland Definition and Procedures.

There are no areas of CDFW jurisdiction at the site, including streams, lakes, wetlands, or riparian habitat pursuant to Section 1602 of the Fish and Game Code.

The site contains no areas of potential wetlands as defined under the California Coastal Act. The site does not contain indicators for hydric soils, nor does it contain indicators for wetland hydrology. The site does have small, localized areas with a predominance of wetland indicator plants; however, the overall composition of vegetation does not support a finding of hydrophytic vegetation. The site also has areas that exhibited localized ponding for greater than 14 days in Spring 2023; however, this ponding was due to well above average rainfall and frequent storms that constantly refilled the ponded areas, which does not support a finding of wetland hydrology, as discussed in the Results section below.

I. METHODOLOGY

Prior to beginning the field delineation, a color aerial photograph, a topographic base map of the property, the previously cited USGS topographic map, a soils map, and National Wetland Inventory "Wetland Mapper" website[2] were examined to determine the locations of potential areas of Corps, Regional Board, and CDFW jurisdiction and wetlands defined under the CCA. Suspected jurisdictional and/or wetland areas were field checked for evidence of stream activity and/or wetland vegetation, soils and hydrology. Potential wetland areas were evaluated using the methodology set forth in the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual[3] (Wetland Manual) and the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Supplement (Arid West Supplement).[4] Reference was also made to the 2019 State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (State Board Wetland Definition and Procedures) to identify suspected State wetland habitats as regulated by the Regional Board.[5] While in the field, the

[2] https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/
[3] Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experimental Station, Vicksburg, Mississippi.
[4] U.S. Army Corps of Engineers. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
[5] State Water Resources Control Board. 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State.

locations where data was collected were recorded with a sub-meter Trimble GPS device in conjunction with a color aerial photograph using visible landmarks.

In order to eliminate sampling bias, data collection points for potential wetland hydrology, soils, and vegetation in the western field were located along four transects in a rough grid pattern. The spacing between of each of the points and between the four transects was determined using a random numbers generator [Exhibit 3].

The National Cooperative Soil Survey (NCSS) has mapped the following soil types as occurring in the general vicinity of the project site:

Bolsa Silty Clay Loam

The Bolsa series consists of somewhat poorly drained soils on alluvial fans. These soils formed in mixed alluvium. Slopes are from 0 to 2 percent. In a typical profile, soil from 0 to 12 inches consists of light brownish gray (10YR 6/2) silty clay loam that becomes dark grayish brown (10YR 4/2) when moist. Soil from 12 to 18 inches consists of light brownish gray (10YR 6/2) silty clay loam, which becomes dark grayish brown (10YR 4/2) when moist and exhibits few, faint mottles. These soils are typically used for row and field crops, as well as urban development.

The Bolsa series is not identified as hydric in the SCS's publication, Hydric Soils of the United States or in the Hydric Soil List for Orange County and Western Part of Riverside County, California.

II. JURISDICTION

A. Army Corps of Engineers

Pursuant to Section 404 of the Clean Water Act, the Corps regulates the discharge of dredged and/or fill material into waters of the United States. The term “waters of the United States” is defined in Corps regulations at 33 CFR Part 328.3(a) as:

(1) Waters which are:

(i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(ii) The territorial seas; or

(iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

(3) Tributaries of waters identified in paragraphs (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:

(i) Waters identified in paragraph (a)(1) of this section; or

(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

Corps regulations at 33 CFR Part 328.3(b) exclude the following from being "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5) above:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;

(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

(8) Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

In the absence of wetlands, the limits of Corps jurisdiction in non-tidal waters, such as intermittent streams, extend to the OHWM which is defined at 33 CFR 328.3(c)(4) as:

> ...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

"Adjacent" wetlands are defined by 33 CFR 328.3(c)(2) as those wetlands "having a continuous surface connection" to other waters of the United States.

1. Wetland Definition Pursuant to Section 404 of the Clean Water Act

The term "wetlands" (a subset of "waters of the United States") is defined at 33 CFR 328.3(c)(1) as "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." In 1987 the Corps published the Wetland Manual to guide its field personnel in determining jurisdictional wetland boundaries. The methodology set forth in the Wetland Manual and the Arid West Supplement generally require that, in order to be considered a wetland, the vegetation, soils, and hydrology of an area exhibit at least minimal hydric characteristics. While the Wetland Manual and Arid West Supplement provide great detail in methodology and allow for varying special conditions, a wetland should normally meet each of the following three criteria:

- More than 50 percent of the dominant plant species at the site must be hydrophytic in nature as published in the most current national wetland plant list;

- Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation (e.g., a gleyed color, or mottles with a matrix of low chroma indicating a relatively consistent fluctuation between aerobic and anaerobic conditions); and

- Whereas the Wetland Manual requires that hydrologic characteristics indicate that the ground is saturated to within 12 inches of the surface for at least five percent of the growing season during a normal rainfall year, the Arid West Supplement does not include quantitative criteria with the exception for areas with "problematic hydrophytic vegetation", which require a minimum of 14 days of ponding to be considered a wetland.

B. Regional Water Quality Control Board

The State Water Resource Control Board and each of its nine Regional Boards regulate the discharge of waste (dredged or fill material) into waters of the United States[6] and waters of the State. Waters of the United States are defined above in Section II.A and waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code 13050[e]).

Section 401 of the CWA requires certification for any federal permit or license authorizing impacts to waters of the U.S. (i.e., waters that are within federal jurisdiction), such as Section 404 of the CWA and Section 10 of the Safe Rivers and Harbors Act, to ensure that the impacts do not violate state water quality standards. When a project could impact waters outside of federal jurisdiction, the Regional Board has the authority under the Porter-Cologne Water Quality Control Act to issue Waste Discharge Requirements (WDRs) to ensure that impacts do not violate state water quality standards. Clean Water Act Section 401 Water Quality Certifications, WDRs, and waivers of WDRs are also referred to as orders or permits.

1. State Wetland Definition

The State Board Wetland Definition and Procedures define an area as wetland as follows: "An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2)

[6] Therefore, wetlands that meet the current definition, or any historic definition, of waters of the U.S. are waters of the state. In 2000, the State Water Resources Control Board determined that all waters of the U.S. are also waters of the state by regulation, prior to any regulatory or judicial limitations on the federal definition of waters of the U.S. (California Code or Regulations title 23, section 3831(w)). This regulation has remained in effect despite subsequent changes to the federal definition. Therefore, waters of the state includes features that have been determined by the U.S. Environmental Protection Agency (U.S. EPA) or the U.S. Army Corps of Engineers (Corps) to be "waters of the U.S." in an approved jurisdictional determination; "waters of the U.S." identified in an aquatic resource report verified by the Corps upon which a permitting decision was based; and features that are consistent with any current or historic final judicial interpretation of "waters of the U.S." or any current or historic federal regulation defining "waters of the U.S." under the federal Clean Water Act.

the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation."

The following wetlands are waters of the State:

1. Natural wetlands;
2. Wetlands created by modification of a surface water of the state; and
3. Artificial wetlands that meet any of the following criteria:
    a. Approved by an agency as compensatory mitigation for impacts to other waters of the state, except where the approving agency explicitly identifies the mitigation as being of limited duration;
    b. Specifically identified in a water quality control plan as a wetland or other water of the state;
    c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or
    d. Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not waters of the state unless they also satisfy the criteria set forth in 2, 3a, or 3b):
        i. Industrial or municipal wastewater treatment or disposal,
        ii. Settling of sediment,
        iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program,
        iv. Treatment of surface waters,
        v. Agricultural crop irrigation or stock watering,
        vi. Fire suppression,
        vii. Industrial processing or cooling,
        viii. Active surface mining – even if the site is managed for interim wetlands functions and values,
        ix. Log storage,
        x. Treatment, storage, or distribution of recycled water, or
        xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or
        xii. Fields flooded for rice growing.

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not waters of the state. If an aquatic

feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a water of the state.

C. California Department of Fish and Wildlife

Pursuant to Division 2, Chapter 6, Sections 1600-1603 of the California Fish and Game Code, the CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife.

CDFW defines a stream (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." CDFW's definition of "lake" includes "natural lakes or man-made reservoirs." CDFW also defines a stream as "a body of water that flows, or has flowed, over a given course during the historic hydrologic regime, and where the width of its course can reasonably be identified by physical or biological indicators."

It is important to note that the Fish and Game Code defines wildlife to include "all wild animals, birds, plants, fish, amphibians, invertebrates, reptiles, and related ecological communities, including the habitat upon which they depend for continued viability" (FGC Division 0.5, Chapter 1, section 89.5. Furthermore, Division 2, Chapter 5, Article 6, Section 1600 et seq. of the California Fish and Game Code does not limit jurisdiction to areas defined by specific flow events, seasonal changes in water flow, or presence/absence of vegetation types or communities.

D. Wetlands Defined Under California Coastal Act

In accordance with definitions in the Coastal Act, wetlands are defined as follows:

> WETLAND - is defined by Section 30121 of the Coastal Act as lands 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. The definition of wetland is further detailed by Section 13577 (b)(1) of the California Code of Regulations 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.

According to the Coastal Commission, the presence of any one of three wetland indicators (hydrology, hydrophytes, or hydric soils) qualifies an area as a wetland under this definition. Furthermore, the Coastal Commission establishes the upland limit of a wetland 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).

The Commission's determination of the presence of a "One Parameter Wetland" typically follows the methods contained U.S. Army Corps of Engineers 1987 Wetland Delineation Manual[7] (Wetland Manual) and more recently, the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (AWS v.2.0).[8] It should be noted, however, that the Army Corps of Engineers and the Wetland Manual requires the presence of all three factors—wetlands hydrology, hydric soils, and a predominance of hydrophytic vegetation—to determine the presence and delineate the boundaries of a federal wetland. While the Commission relies on the federal manuals to establish the presence of any of the three parameters, according to Commission staff typically the presence of a single parameter (e.g., a predominance of wetland vegetation) is sufficient to demonstrate the presence of a wetland and for the Commission to make a presumptive finding for the presence of wetlands.

III. RESULTS

A. Site Description

The proposed solar panel array Project site is located along the northern and eastern boundaries of the Hellman Property as depicted on Exhibit 3. The Project site spans two distinct areas, referred to here as the western field and eastern field, each of which consists of a generally flat

[7] Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1, U.S. Army Engineer Waterways Experimental Station, Vicksburg, Mississippi.

[8] U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*. Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

field that supports herbaceous vegetation; however, the two areas exhibit differing mixes of herbaceous species.

The western field is characterized by a mosaic of upland grasses and forbs such as ripgut (*Bromus diandrus*, UPL), wild oats (*Avena fatua*, UPL), five-hook bassia (*Bassia hyssopifolia*, FACU), and seaside heliotrope (*Heliotropium curassavicum*, FACU), mixed with plants with an indicator status of FAC or wetter such as saltgrass (*Distichlis spicata*, FAC), with limited amounts of alkali heath (*Frankenia salina*, FACW), and southern tarplant (*Centromadia parryi* ssp. *australis*, FACW).

The eastern field supports only upland vegetation and is notably completely lacking saltgrass (*Distichlis spicata*, FAC), southern tarplant (*Centromadia parryi* ssp. *australis*, FACW), and alkali weed (*Cressa truxillensis*, FACW). The eastern area is dominated by upland grasses and forbs including five-hook bassia (*Bassia hyssopifolia*, FACU), seaside heliotrope (*Heliotropium currassavicum*, FACU), wild radish (*Raphanus sativus*, UPL), stinkwort (*Dittrichia graveolens*, UPL) and upland shrubs such as coyote brush (*Baccharis pilularis*, UPL). Areas of coyote brush include a few individuals of mulefat (*Baccharis salicifolia*, FAC); however, the mulefat is not a dominant species and as such does not function as a wetland indicator in this area.

A portion of the 100-foot buffer adjacent to the eastern field extends into a water quality basin associated with the Heron Pointe residential development [Exhibit 3]. This basin is vegetated with riparian vegetation and may contain areas with wetland hydrology and/or hydric soil indicators. However, because it is a constructed water quality basin, is not part of the Hellman Property, and would not be impacted by the proposed project, it is not addressed in this analysis.

In 2022, a total of 15 soil pits were excavated within the western field as depicted on Exhibit 3, and no hydric soils were detected. Soils uniformly exhibited a chroma of 2.5Y3/3, except for one pit with a chroma of 2.5Y3/2, with no redoximorphic features or other hydric soil indicators. Similarly, the site did not exhibit any indicators for wetland hydrology.

It should be noted that rainfall in 2022 was below average. The National Weather Service cooperative observer station in Long Beach, CA recorded rainfall at 62 percent of average for the 2021-2022 water year.[9] Nevertheless, germination of FACW species such as southern tarplant and alkali weed was observed, indicating that extreme drought conditions were not present. While the reduced rainfall may have resulted in reduced germination of the southern tarplant seedbank, it was noted that the tarplant generally occurred in the same locations mapped in 2009 and 2010, when rainfall at the Long Beach station was at 73 and 121 percent of average,

[9] https://www.cnrfc.noaa.gov/monthly_precip_2022.php

respectively.[10] Tarplant data collected in 2009 and 2010 showed similar distribution as 2022 indicating suitable conditions for assessing the presence or absence of wetland indicator plants.

On March 6, 2023, a ponded area was observed in the western field that remained ponded for longer than 14 days. However, this ponding was due to a series of high rainfall total storm events, and not indicative of wetland hydrology. As of April 2, 2023, rainfall during the 2022-2023 water year totaled 20.46 inches, which is 185 percent of normal. February rainfall totaled 2.90 inches and March rainfall totaled 6.91 inches.[11] It is noteworthy that indicators for hydric soils were not detected within the western field, including the area with ponding, suggesting that sufficient ponding has not occurred over the years that has resulted in the formation of hydric indicators. Additionally, a review of historic aerial photography[12] shows oil field work in 2013 that included trenching through the subject area, which modified the local topography, creating a topographic low spot that collects runoff from the surrounding field and adjacent road during significant rain events. Additionally, the Tank Farm Relocation Project, which was constructed in 2010-2011, included authorizations to use excess fill material generated during construction to raise the elevations of the oil field roads, which further contributes runoff to areas of shallow seasonal ponding in the adjacent fields.

In the eastern field, because of the almost complete lack of plants with an indicator status of FAC or wetter, only one soil pit was excavated to characterize the soil as depicted on Exhibit 3.

B. Corps Jurisdiction

As noted above, the western field supports a mosaic of upland species and species with an indicator status of FAC or FACW. Of the 15 locations where data was collected, six supported a predominance of plants with an indicator status of FAC or wetter; however, of these six points, three points failed the Prevalence Index (PI) test. Furthermore, the collective PI score for all 15 data collection points was 3.91, which is clearly in the upland range. Combined with the complete lack of hydric soil indicators and complete absence of indicators for wetland hydrology, the western field does not meet the thresholds for wetlands in accordance with the criteria in the AWS v 2.0.

The eastern field, unlike the western field, is completely dominated by upland species, so only one soil pit was excavated. This pit was located in an area of monocultural seaside heliotrope (*Heliotropum curassavicum*, FACU) that lacked indicators for both hydric soils and wetland

[10] 2009 data: https://www.cnrfc.noaa.gov/monthly_precip_2009.php; 2010 data: https://www.cnrfc.noaa.gov/monthly_precip_2010.php
[11] Data from the LGB Long Beach Airport weather station. Monthly and water year data available at https://www.cnrfc.noaa.gov/monthly_precip.php and https://www.cnrfc.noaa.gov/awipsProducts/RNORR4RSA.php
[12] Source: Google Earth

hydrology. Therefore, the eastern area does not meet the thresholds for wetlands in accordance with the criteria in the AWS v 2.0.

B. Regional Water Quality Control Board Jurisdiction

Based on the determination for Corps jurisdiction stated above, the Project site does not support wetlands in accordance with the State Board Wetland Definition and Procedures defined in Section II.B above.

C. CDFW Jurisdiction

The Project site does not contain any aquatic features including wetlands, streams, lakes, or riparian habitat that would be subject to the Notification requirements pursuant to Section 1602 of the California Fish and Game Code.

D. Coastal Act Wetlands

Western Field

Vegetation

As noted above for Corps wetlands, the western field supports a mosaic of upland species and species with an indicator status of FAC or FACW. The most common species with an indicator of FAC or wetter was salt grass (*Distichlis spicata*, FAC), which was common in substantial portions of the site. Saltgrass is a well-documented phreatophyte that exhibits the ability to reach ground water or moist soils at 11 feet below ground surface and as such is not a reliable indicator of wetland conditions (saturation in the upper 12 inches), especially in the absence of any indicators for wetland hydrology and hydric soils.

Of the 15 locations in the western field where data was collected, six supported a predominance of plants with an indicator status of FAC or wetter. Of these six locations, in five instances, saltgrass was one of the dominant species, and three locations failed the Prevalence Index (PI) test. It is notable that the collective PI for all 15 data collection points in the western field scored 3.91, which is clearly in the upland range. A collective PI of 3.91 is well above the threshold for the presence of a hydrophytic plant community. Ralph Tiner addresses the problem of basing any wetland determination on Facultative (FAC) vegetation alone and the importance of using a tool with more accurate measurement capabilities (i.e., the Prevalence Index):

> A plant community with a weighted average index (prevalence index) of 3.0 (±0.5) therefore is equivalent to a FAC species that occurs equally in wetlands

> and non-wetlands. Such communities (2.5 through 3.5) are inconclusive regarding their wetland status as assessed by vegetation analysis alone; in other words, other features [hydrology and soils] must be examined to determine whether they are wetland or not.[13]

In addition, the Arid West Supplement has a note regarding the presence of phreatophytes that is relevant to this site. As noted, saltgrass is a well-documented phreatophyte with a root structure that can reach up to 11 feet below the surface to reach the groundwater table or moist soil conditions. On page 91, the Arid West Supplement cautions the reader regarding riparian species that have similarly deep roots:

> Examples of species that occur in these situations include cottonwoods (e.g., *Populus deltoides*, *P. fremontii*) and tree-forming willows (e.g., *Salix gooddingii*, *S. laevigata*). These areas may have a high frequency of phreatophytic species that, when mature, are able to exploit groundwater that is too deep to support wetlands. In such situations, there may be a hydrophytic overstory and a non- hydrophytic understory. If the soils are Entisols lacking hydric soil features and/or wetland hydrology is problematic, more emphasis should be placed on the understory, which may be more indicative of current wetland or non-wetland conditions.[14]

Functionally, the saltgrass behaves like the riparian trees noted in the excerpt from the Arid West Supplement. Given the predominance of upland grasses such as Brome species it is reasonable to assume that the saltgrass is not functioning as a wetland indicator, which is consistent with the lack of hydric soils and apparent lack of hydrology.

Hydrology

The ponded area depicted on Exhibit 5 ponded for greater than 14 days as described above, due to well above average rainfall. In 2022, no primary or secondary indicators of wetland hydrology were detected at any of the 15 data points sampled in the western field.

It should also be noted that regular plowing or disking of the soil, as has been typical for the western portion of the site for decades, impacts soil characteristics. Specifically, it is well documented in the scientific literature that plowing or disking eliminates the soil pores that occur in undisturbed soils. Elimination of the soil pores alters the drainage characteristics of the soil

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[13] Tiner, Ralph W. 1999. *Wetland Indicators: A Guide to Wetland Identification, Delineation, Classification, and Mapping*. Lewis Publishers, New York, pp. 111-113.

[14] U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*. Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center, p 91.

such that plowed soils tend to pond water much more readily and hold water at the surface than do unplowed soils. [15,16] Because the disking prevents water from moving through the soil profile, it would also preclude saturation within the soil column retarding or preventing formation of hydric soil indicators. Thus, the ponding observed in the western field occurs for longer durations that would occur should such disking not be implemented for weed control as required by the Orange County Fire Authority.

Soils

As discussed above, no hydric soils were detected in the 15 soil pits excavated in the western field. Soils uniformly exhibited a chroma of 2.5Y3/3, except for one pit with a chroma of 2.5Y3/2, with no redoximorphic features or other hydric soil indicators.

Given the complete lack of hydric soil indicators, absence of indicators for wetland hydrology that are not associated with ponding due to rainfall totaling 185 percent of normal, and a plant community with a collective prevalence index of 3.91, the western field does not meet the thresholds for Coastal Act wetlands in accordance with the criteria established in the AWS v 2.0.

Eastern Field

In the eastern field, data was collected at only one point due to the lack of wetland indicator plant species. The one soil pit excavated lacked any indicators of hydric soils or wetland hydrology, and was dominated by seaside heliotrope (*Heliotropium currassavicum*, FACU). Together with the upland plant community, the overall lack of indicators for wetland hydrology and hydric soils across the eastern field indicate that it does not meet the thresholds for Coastal Act wetlands in accordance with the criteria established in the AWS v 2.0.

E. U.S. Fish and Wildlife Service National Wetland Inventory

As noted in the methodology section, the National Wetland Inventory "Wetland Mapper" categorizes much of the western field and the western portion of the eastern field as wetland with the classification code *PEM1Ax*. The U.S. Fish and Wildlife Service includes the following on the National Wetland Inventory website regarding Wetlands Data Limitations, Exclusions and Precautions

> *The U.S. Fish and Wildlife Service's (Service) objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the*

[15] https://crops.extension.iastate.edu/encyclopedia/frequent-tillage-and-its-impact-soil-quality
[16] https://extension.umn.edu/soil-management-and-health/soil-compaction

> *analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.*
>
> *The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.*
>
> *Wetlands or other mapped features may have changed since the date of the imagery and/or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.*

Most of the western area and the western portion of the eastern field are mapped on the Wetland Mapper as follows.

a) Classification code: PEM1Ax [Excerpted from Wetland Mapper][17]

> *System **Palustrine (P)**: The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 ppt. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2.5 m (8.2 ft) at low water; and (4) salinity due to ocean-derived salts less than 0.5 ppt.*
>
> *Class **Emergent (EM)**: Characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. Subclass **Persistent (1)**: Dominated by species that normally remain standing at least until the beginning of the next growing season. This subclass is found only in the Estuarine and Palustrine systems.*

[17] https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

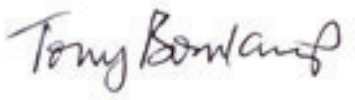
> *Water Regime **Temporary Flooded (A)**: Surface water is present for brief periods (from a few days to a few weeks) during the growing season, but the water table usually lies well below the ground surface for most of the season.*
>
> *Special Modifier **Excavated (x)**: This Modifier is used to identify wetland basins or channels that were excavated by humans.*

The Wetlands Mapper assessment is not accurate, as shown by the on-the-ground assessment recommended by the Limitations, Exclusions, and Precautions for the tool. As noted above, neither the western field nor the eastern field contain wetlands; only a few limited areas exhibit a predominance of wetland indictor plants with an indictor status of FAC or wetter, and these areas lack wetland hydrology and hydric soils. Overall, the western field is dominated by herbaceous upland vegetation mixed with wetland indicator species, and the eastern field supports only upland vegetation while lacking wetland hydrology and hydric soils.

If you have any questions about this letter report, please contact Tony Bomkamp at (949) 929-1651 or Erin Trung at etrung@wetlandpermitting.com.

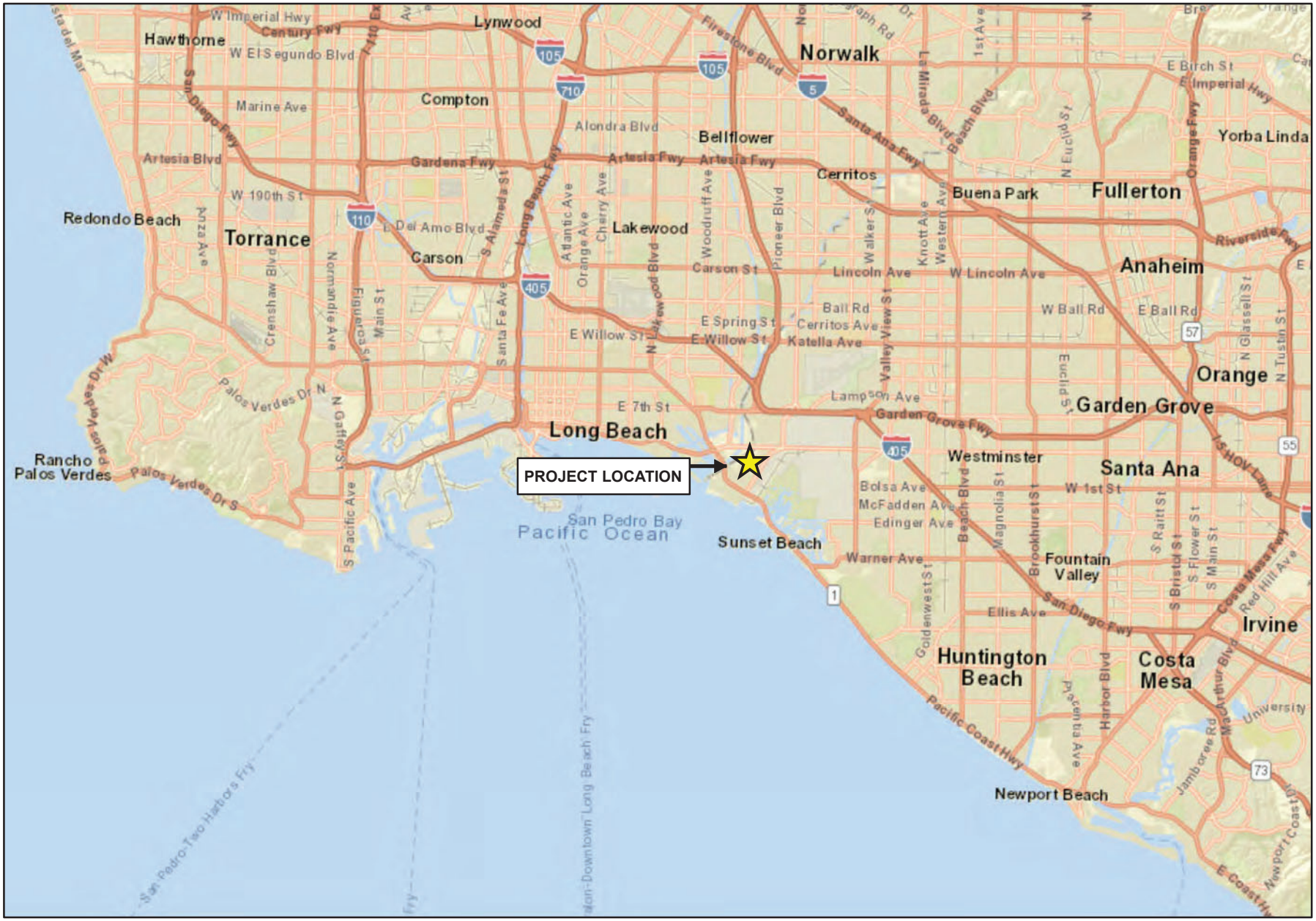
Sincerely,

GLENN LUKOS ASSOCIATES, INC.



Tony Bomkamp
Senior Regulatory Specialist

p:0200-8c.JD



Source: ESRI World Street Map

N

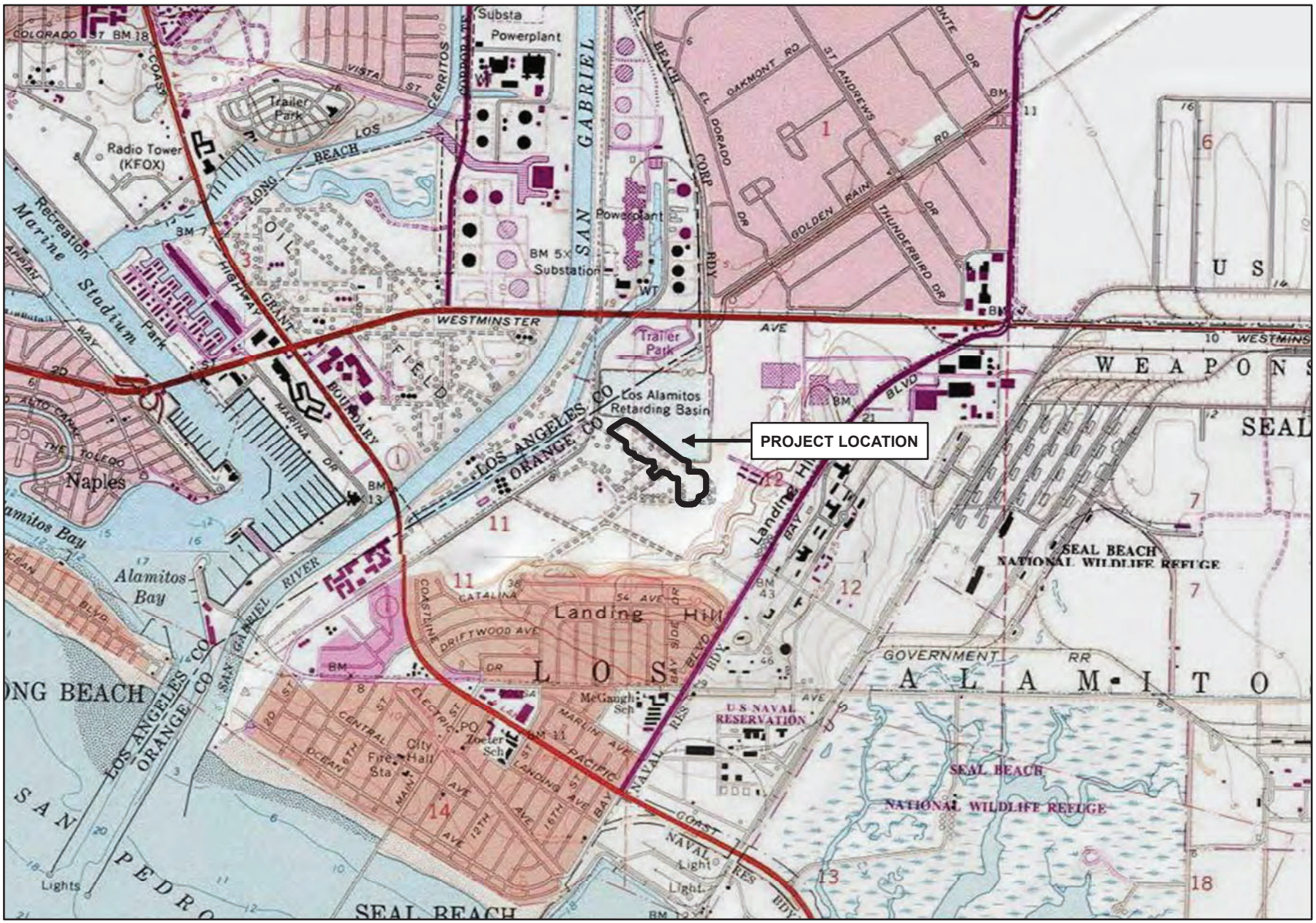
0 2 4 8 Miles

HELLMAN PROPERTY
SOLAR PANEL ARRAY

Regional Map

GLENN LUKOS ASSOCIATES

Exhibit 1



Adapted from USGS Los Alamitos, CA quadrangle

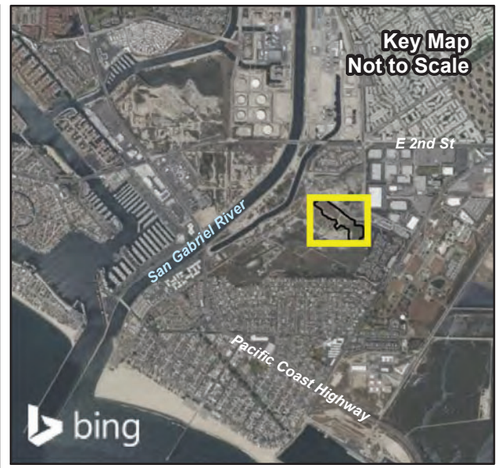
HELLMAN PROPERTY
SOLAR PANEL ARRAY

Vicinity Map

GLENN LUKOS ASSOCIATES

Exhibit 2





Study Area

Western Field

Eastern Field

Heron Pointe
Water Quality Basin

Non-Wetland Ponded Area

Data Point

N

0 62.5 125 250

Feet

1 inch = 125 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 15, 2023

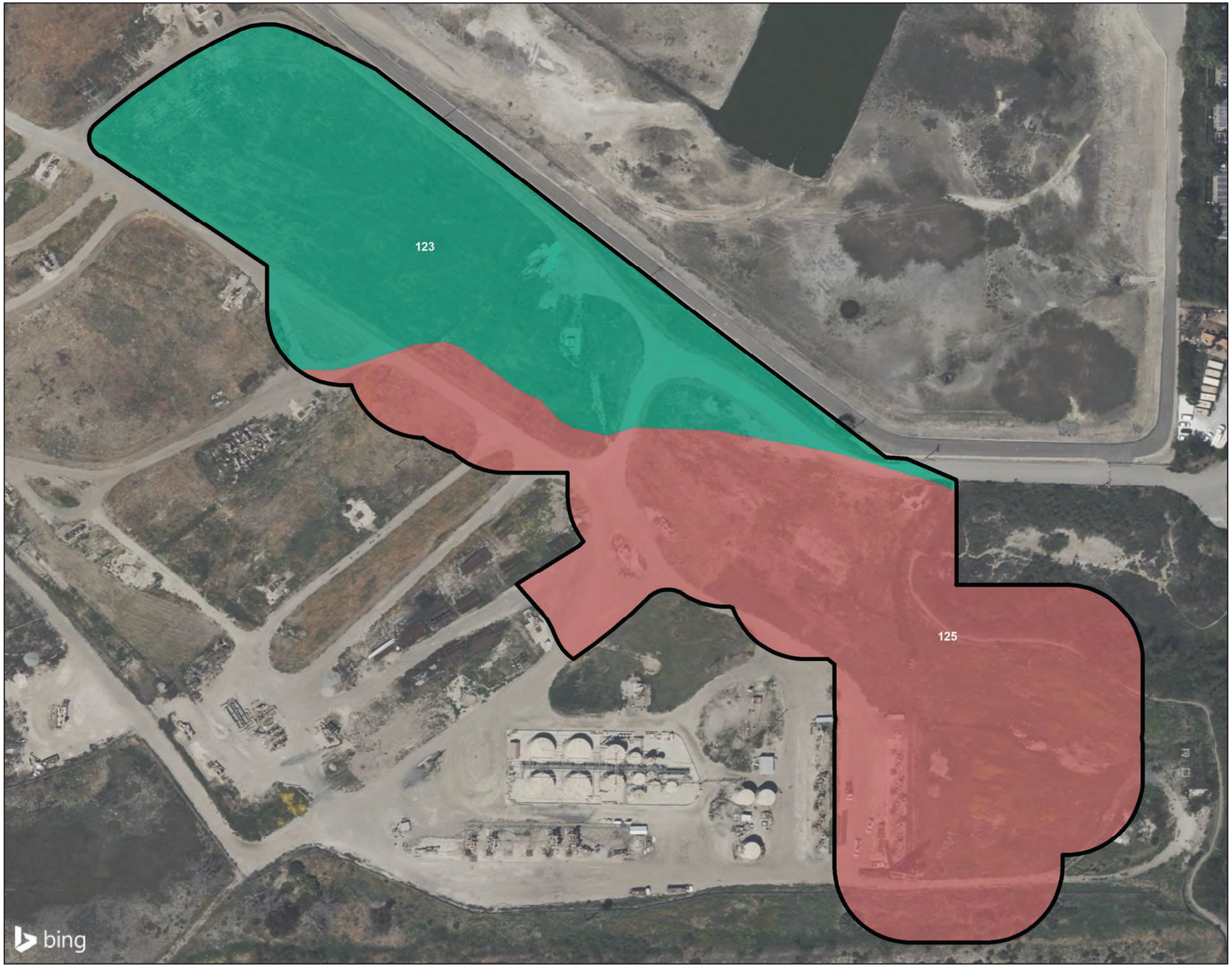
HELLMAN PROPERTY
SOLAR PANEL ARRAY

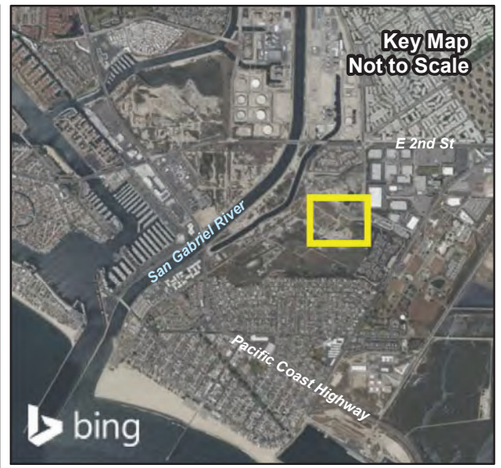
Jurisdictional Determination Map

GLENN LUKOS ASSOCIATES

Exhibit 3

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Study Area

123 Bolsa Silt Loam, Drained

125 Bolsa Silty Clay Loam, Drained

N

0 62.5 125 250

Feet

1 inch = 125 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 4, 2023

HELLMAN PROPERTY
SOLAR PANEL ARRAY

Soils Map

GLENN LUKOS ASSOCIATES

Exhibit 4

X:\00 - 0362 ONLY\0200-08SOLA\GIS\SoilsGIS\200-8_Soils.mxd



Photograph 1: West-facing view in the eastern field area of the Project site. Note the high level of disturbance. Plant species in this area include alkali heliotrope, five-hook bassia, summer mustard, and perennial pepperweed. August 25, 2022.



Photograph 2: North-facing view of the eastern field portion of the Project site. Data Point #16 is located in the large patch of alkali heliotrope (*Heliotropium currasavicum*). in the center of the photo. August 25, 2022.

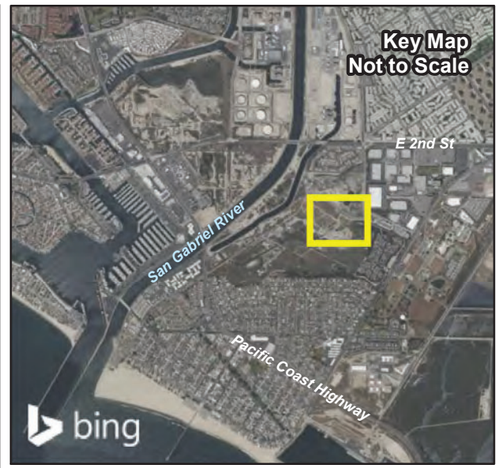


Photograph 3: West-facing view of western field portion of the Project. This area is vegetated with the *Distichlis spicata*-annual grasses association with a few small patches of alkali heath (*Frankenia salina*). There is no wetland hydrology or hydric soils, and the overall prevalence index of the western field is >3. July 29, 2022.



Photograph 4. View of *Cressa truxillensis* area in the northwest portion of the western field. This area will not be impacted by the proposed Project and is almost entirely outside of the 100-foot buffer.. August 25, 2022 :





Study Area

Freshwater Emergent Wetland

Freshwater Pond

N

0 62.5 125 250

Feet

1 inch = 125 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 5, 2023

HELLMAN PROPERTY SOLAR PANEL ARRAY

National Wetland Inventory Map

GLENN LUKOS ASSOCIATES

Exhibit 6

X:\00 - 0362 ONLY\0200-08SOLA\GIS\NWI_GIS\200-8_NWI.mxd

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-1

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Distichlis spicata	50	Y	FAC
2. Bassia hyssopifolia	5	N	FACU
3. Centromadia parryi australis	1	N	FACW
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 34 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 1	x 2 = 2
FAC species 50	x 3 = 150
FACU species 5	x 4 = 20
UPL species _____	x 5 = _____
Column Totals: 56 (A)	172 (B)

Prevalence Index = B/A = 3.07

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-2

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Distichlis spicata	20	Y	FAC
2. Centromadia parryi australis	10	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species 10	x 2 =	20
FAC species 20	x 3 =	60
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: 30 (A)		80 (B)

Prevalence Index = B/A = 2.67

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-3

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Distichlis spicata	30	Y	FAC
2. Bassia hyssopifolia	2	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 30	x 3 =	90
FACU species 2	x 4 =	8
UPL species	x 5 =	
Column Totals: 32 (A)		98 (B)

Prevalence Index = B/A = 3.06

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-4

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Cressa truxillensis	25	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	25 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 75 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 25	x 2 = 50
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: 25 (A)	50 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-5

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	60	Y	UPL
2. Bassia hyssopifolia	3	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	63 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 37 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 3	x 4 =	12
UPL species 60	x 5 =	300
Column Totals: 63 (A)		312 (B)

Prevalence Index = B/A = 4.95

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-6

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	40	Y	UPL
2. Distichlis spicata	40	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 40	x 3 =	120
FACU species	x 4 =	
UPL species 40	x 5 =	200
Column Totals: 80 (A)		320 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/2	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-7

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	20	Y	UPL
2. Distichlis spicata	45	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 45	x 3 =	135
FACU species	x 4 =	
UPL species 20	x 5 =	100
Column Totals: 65 (A)		235 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-8

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	50	Y	UPL
2. Distichlis spicata	2	N	FAC
3. Frankenia salina	5	N	FACW
4.			
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species 5	x 2 =	10
FAC species 2	x 3 =	6
FACU species _____	x 4 =	_____
UPL species 50	x 5 =	250
Column Totals: 57 (A)		266 (B)

Prevalence Index = B/A = 4.67

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-9

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	30	Y	UPL
2. Bassia hyssopifolia	20	Y	FACU
3. Hordeum marinum gussoneanum	15	Y	FAC
4.			
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species 15	x 3 =	45
FACU species 20	x 4 =	80
UPL species 30	x 5 =	150
Column Totals: 65 (A)		275 (B)

Prevalence Index = B/A = 4.23

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-10

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	40	Y	UPL
2. Avena fatua	10	N	UPL
3. Frankenia salina	3	N	FACW
4. Distichlis spicata	2	N	FAC
5.			
6.			
7.			
8.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 3	x 2 = 6
FAC species 2	x 3 = 6
FACU species _____	x 4 = _____
UPL species 50	x 5 = 250
Column Totals: 55 (A)	262 (B)

Prevalence Index = B/A = 4.76

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-11

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	20	Y	UPL
2. Distichlis spicata	10	Y	FAC
3. Frankenia salina	10	Y	FACW
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 10	x 2 = 20
FAC species 10	x 3 = 30
FACU species _____	x 4 = _____
UPL species 20	x 5 = 100
Column Totals: 40 (A)	150 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-12

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	40	Y	UPL
2. Distichlis spicata	10	N	FAC
3. Frankenia salina	3	N	FACW
4.			
5.			
6.			
7.			
8.			
	53 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 47 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 3	x 2 = 6
FAC species 10	x 3 = 30
FACU species _____	x 4 = _____
UPL species 40	x 5 = 200
Column Totals: 53 (A)	236 (B)

Prevalence Index = B/A = 4.45

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-13

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Raphanus sativus	90	N	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species 90	x 5 = 450
Column Totals: 90 (A)	450 (B)

Prevalence Index = B/A = 5.0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-14

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Festuca perenne	10	N	FAC
2. Distichlis spicata	40	Y	FAC
3. Frankenia salina	40	Y	FACW
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 40	x 2 = 80
FAC species 50	x 3 = 150
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: 90 (A)	230 (B)

Prevalence Index = B/A = 2.56

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 08-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-15

Investigator(s): T Bomkamp/E Trung Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Heliotropium currasavicum	30	Y	FACU
2. Bassia hyssopifolium	10	Y	FACU
3. Centromadia parryi australis	2	N	FACW
4.			
5.			
6.			
7.			
8.			
	42 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 58 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 2	x 2 = 4
FAC species _____	x 3 = _____
FACU species 40	x 4 = 160
UPL species _____	x 5 = _____
Column Totals: 42 (A)	164 (B)

Prevalence Index = B/A = 3.90

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hellman Ranch City/County: Orange Sampling Date: 10-25-22

Applicant/Owner: Hellman Properties LLC State: CA Sampling Point: DP-16

Investigator(s): E Trung/B Gale Section, Township, Range: Unsectioned, T4S, R12W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <2%

Subregion (LRR): LRR C Lat: 33.754663 Long: -118.090589 Datum: NAD 83

Soil Map Unit Name: Bolsa Silty Clay Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Heliotropium curassavicum	50	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 50	x 4 =	200
UPL species	x 5 =	
Column Totals: 50 (A)		200 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 3/3	100	None	0.0	NA	NA	SCL	No Redox or other indicators

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes _____ No ✓

Remarks:

No soil color assessed. Soil is mixed fill material with broken concrete pieces and small rocks. No hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators. Review of historic aerials shows no evidence of ponding or saturation during wetter than normal years.

SOUTHERN TARPLANT
MITIGATION AND MONITORING PLAN

FOR

HELLMAN PROPERTY SOLAR PANEL ARRAY

LOCATED IN THE CITY OF SEAL BEACH, ORANGE COUNTY, CALIFORNIA

Prepared For:

Hellman Properties LLC
P.O. Box 2398
Seal Beach, California 90740
Contact: Devon Shea
Phone: (562) 431-6022 ext. 101

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October 12, 2023

INFORMATION SUMMARY

A. Restoration Plan Date: October 12, 2023

B. Report Title: Southern Tarplant Mitigation and Monitoring Plan for Hellman Property Solar Panel Array

C. Project Site Location: Seal Beach, Orange County

D. Owner/Applicant:
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Devon ShayBusiness Manager
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Seal Beach, California 90740
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Report Preparer: Erin Trung

F. Individuals Conducting Fieldwork: Tony Bomkamp, Erin Trung, Brittany Gale, David Moskovitz

TABLE OF CONTENTS

Page #

1.0 INTRODUCTION 1
1.1 Background and Scope of Work 1
1.2 Project Location 1
1.3 Project Description 1
2.0 METHODOLOGY FOR RARE PLANT SURVEYS 2
2.1 Botanical Resources 3
3.0 SPECIES SUBJECT TO IMPACTS AND MITIGATION 4
3.1 Southern Tarplant (*Centromadia parryi* ssp. *australis*) 4
3.1 Impacts to Southern Tarplant 5
4.0 HABITAT MITIGATION AND MONITRING PLAN 5
4.1 Existing Conditions for Project Area Occupied by Southern Tarplant 6
4.2 Existing Conditions for Area Subject Southern Tarplant Translocation 6
4.3 Seed Collection from Donor/Impact Population 6
4.4 Preparation of Translocation Site 7
4.5 Plant Palette for Translocation Site 7
4.6 Broadcasting Seed at Translocation Site 7
4.7 Five-Year Maintenance Program 8
4.8 Five-Year Monitoring Program 8
4.8 Annual Monitoring Reports 11
5.0 COMPLETION OF COMPENSATORY MITIGATION 11
5.1 Notification of Completion 11
5.2 Final Performance Standards Resolution 11
6.0 CONTINGENCY MEASURES 12
6.1 Initiating Procedures 12
6.2 Alternative Locations for Contingency Mitigation 12
6.3 Funding Mechanism 12
6.4 Responsible Parties 13
7.0 LONG-TERM MANAGEMENT PLAN AND ASSOCIATED FUNDING 13
7.1 Monitoring Tasks 13
7.2 Funding and Prioritizing Tasks 14
7.0 REFERENCES 15

TABLES

Table 2-1. Summary of Focused Botanical Surveys for the Project Site.....2
Table 4.2: Plant Palette for Translocation Area.....7

EXHIBITS

Exhibit 1 Regional Map
Exhibit 2 Vicinity Map
Exhibit 3 Site Plan
Exhibit 4 Special-Status Plants Map
Exhibit 5 Vegetation Map
Exhibit 6 Site Photographs
Exhibit 7 Soils Map
Exhibit 8 Special-Status Plants Impact Map
Exhibit 9 Southern Tarplant Translocation Area

1.0 INTRODUCTION

1.1 Background and Scope of Work

This document provides the results of focused biological surveys for southern tarplant (*Centromedia parryi* ssp. *australis*), quantifies potential impacts, and sets forth proposed mitigation for impacts associated with the approximately 4.57-acre Solar Panel Array project (the Project) located in the City of Seal Beach, Orange County, California. This Habitat Mitigation and Monitoring Plan (HMMP) identifies and evaluates impacts and proposed mitigation to southern tarplant in the context of the California Environmental Quality Act (CEQA), and State regulations such as the California Coastal Act (CCA) and the California Fish and Game Code.

The scope of this plan includes a discussion of existing conditions for the approximately 4.57-acre Project site that is contained with a larger 12.46-acre Study Area. All methods employed regarding the focused southern tarplant surveys, an analysis of impacts to southern tarplant and proposed methods for reestablishment of southern tarplant on the Hellman Property are addressed in more detail below.

1.2 Project Location

The Project site covers approximately 4.57 acres in the City of Seal Beach, Orange County, California [Exhibit 1 – Regional Map] and is located within Sections 11 and 12 of Township 5 South, Range 12 West of the U.S. Geological Survey (USGS) 7.5-minute quadrangle map Los Alamitos, California [Exhibit 2 – Vicinity Map]. The Project site is located on the Hellman Property, which is an active oil field with a network of earthen roads, active oil wells, oil and gas storage tanks, and associated infrastructure. The Project site is located in the northeastern portion of the Hellman Property and is bordered by the Los Alamitos Retarding Basin to the north, a water quality basin associated with the Heron Pointe residential development to the east, and active oil fields to the south and west. A portion of the Los Cerritos Wetlands, which was formerly part of the Hellman Property, is located to the south and west beyond the active oil field.

1.3 Project Description

The proposed project consists of the installation of a 1.5MW fixed-tilt ground mounted solar photovoltaic system. This system will interconnect with the Hellman Property's electrical infrastructure and operate in parallel with the utility grid to provide sustainable clean energy in support of the facilities operations. The system features three arrays with a total of 56 low profile table structures supported by piles with concrete foundations.

For this report, the term “Project site” is defined as that area proposed for direct impact by the proposed Project and totals 4.57 acres [Exhibit 3]. The 4.57-acre Project site includes a 2.66-acre permanent impact area and a 1.91-acre temporary impact area consisting of staging and temporary work areas. The term “Study Area” is defined as all portions of the Project site, a 100-foot buffer beyond the Project site that was included in the analysis in accordance with the

requirements of the Coastal Act and the Seal Beach Local Coastal Program (LCP), and additional areas beyond the 100-foot buffer that support sensitive biological resources [Exhibit 3]. The Study Area totals 12.46 acres.

It should be noted that an access road for and a portion of the Los Alamitos Retarding Basin are located within the 100-foot buffer as depicted by Exhibit 3; however, the biological resources in these areas were not mapped or surveyed for this analysis, and these areas are not included in the Study Area.

2.0 METHODOLOGY FOR RARE PLANT SURVEYS

To adequately identify special-status plants in accordance with the requirements of CEQA, Glenn Lukos Associates (GLA) assembled biological data consisting of the following components:

- Performance of vegetation mapping for the Project site
- Evaluation of Soil Surveys for the Project site
- Review of previous special-status plant survey data for the Project site
- Performance of habitat assessments and site-specific biological surveys to evaluate the potential presence/absence of special-status plants in accordance with the requirements of CEQA
- Performance of focused surveys for special-status plants.

The focus of the special-status plant surveys was determined through initial site reconnaissance, review of previous special-status plant survey data, a review of the California Natural Diversity Database (CNDDB, CDFW 2022), CNPS 9th edition online inventory (CNPS 2022), Natural Resource Conservation Service soil data (NRCS 2022), other pertinent literature, knowledge of the region, and GLA's extensive knowledge of the Hellman Property. Site-specific general surveys within the Project site and the surrounding buffer area were conducted on foot in the proposed development areas for special-status plant species. Table 2-1 provides a summary list of survey dates, survey types and personnel.

Table 2-1. Summary of Focused Botanical Surveys for the Project Site

Survey Type	Survey Dates	Biologist(s)
Vegetation Mapping	July 29, August 4, August 25, October 25 2022	TB, ET, BG
Focused Botanical Surveys	July 29 and August 4, 2022 February 17 and March 7, 2023	TB, ET, DM

TB = Tony Bomkamp, ET = Erin Trung, BG = Brittany Gale, DM = David Moskovitz

2.1 Botanical Resources

A site-specific survey program was designed to accurately document the botanical resources within the Project site, and consisted of five components: (1) a literature search; (2) preparation of a list of target special-status plant species and sensitive vegetation communities that could occur within the Project site; (3) general field reconnaissance survey(s); (4) vegetation mapping according to the List of Vegetation Alliances and Associations; and (5) habitat assessments and focused surveys for special-status plants. As will be discussed below, two special-status plants were detected in the Study Area including southern tarplant and Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), both of which had been documented in the Study Area during past surveys by GLA [Exhibit 4 – Special Status Plants Map]. The proposed project fully avoids and provides a buffer for the Coulter's goldfields ranging from approximately 36 to 73 feet.

2.1.1 Literature Search

Prior to conducting fieldwork, pertinent literature on the flora of the region was examined. A thorough archival review was conducted using available literature and other historical records. These resources included the following:

- California Native Plant Society, Rare Plant Program. Inventory of Rare and Endangered Plants of California (online edition, v-9.5, CNPS 2023)
- CNDDB for the Los Alamitos, California USGS 7.5-minute quadrangle and surrounding six quadrangles (CDFW 2022)

The literature review also included biological studies previously conducted for the Hellman Property and adjacent Los Cerritos Wetlands:

- Biological Technical Report, Hellman Ranch Tank Farm Relocation Project (GLA 2006)
- Biological Technical Report for Proposed Hellman Gas Plant Project (GLA 2018)
- Los Cerritos Wetlands Habitat Assessment Report: Habitat Types & Special Status Species (Tidal Influence 2012)

2.1.2 Vegetation Mapping

Vegetation communities within the Project site were mapped according to the "Membership Rules" of the List of Vegetation Alliances and Associations (or California Natural Communities List). The list is based on A Manual of California Vegetation, Second Edition or MCVII, which is the California expression of the National Vegetation Classification. Where necessary, deviations were made when areas did not fit into exact vegetation descriptions (membership rules). Non-conforming vegetation alliances or cover types were named based on the dominant plant species present. Plant communities were mapped in the field directly onto a 100-scale (1″=100′) aerial photograph as depicted on Exhibit 5.

2.1.3 Special-Status Plant Species and Habitats Evaluated for the Project Site

Based on the information compiled from the literature search, vegetation profiles and a list of target sensitive plant species and habitats that could occur within the Project site were developed and incorporated into a mapping and survey program to achieve the following goals: (1) characterize the vegetation associations and land use; (2) prepare a detailed floristic compendium; (3) identify the potential for any special-status plants that may occur within the Project site; and (4) prepare a map showing the distribution of any sensitive botanical resources associated with the Project site, if applicable.

2.1.4 Botanical Surveys

GLA biologists Tony Bomkamp and Erin Trung visited the site on July 29, and August 4, 2022, and Erin Trung and David Moskovitz visited the site on February 17 and March 6, 2023, to conduct general and focused plant survey(s). Southern tarplant was censused and mapped during 2022 surveys, and Coulter's goldfields was mapped during 2023 surveys. Survey(s) were conducted in accordance with accepted botanical survey guidelines (Nelson 1984, USFWS 2000, CNPS 2001, CDFW 2018). As applicable, survey(s) were conducted at appropriate times based on precipitation and flowering periods. An aerial photograph, a soil map, and/or a topographic map were used to determine the community types and other physical features that may support sensitive and uncommon taxa or communities within the Project site. Survey(s) were conducted by following meandering transects within target areas of suitable habitat. All plant species encountered during the field survey(s) were identified and recorded following the above-referenced guidelines. Scientific nomenclature and common names used in this report follow Baldwin et al. (2012) and Munz (1974).

3.0 SPECIES SUBJECT TO IMPACTS AND MITIGATION

3.1 Southern Tarplant (*Centromadia parryi* ssp. *australis*)

Southern tarplant has a California Rare Plant Rank ("CRPR") of 1B.1, indicating that it is rare, threatened, or endangered in California and elsewhere, and is seriously endangered in California. This species is an annual herb in the sunflower family that blooms from May to November. It is adapted to and thrives in disturbed areas, and it also occurs in alkali playas, alkali grasslands, and along the margins of salt marshes. This species is very distinctive and flowers as early as June and sometimes into October or November.

Southern tarplant is typically associated with a variety of mesic (not typically wetland) habitats including alkali grasslands, alkali meadows, and the fringes of alkali marshes as well as the fringes of coastal salt marshes. Native habitats for this species support a suite of grasses, sedges, and rushes that are adapted to slightly to moderately alkaline soils (though GLA has documented this species occurring occasionally in neutral and even slightly acidic soils). Southern tarplant can tolerate, and even thrive, with moderate levels of disturbance including regular mowing or disking if the mowing and/or disking occur in the late fall or early winter after seed set. The ability to tolerate disturbance allows this species to persist in highly disturbed or degraded

landscapes such as some of the most highly disturbed areas on the Project site, which is subject to disking or mowing of weeds to reduce fuel loads as required by the Orange County Fire Authority (OCFA), because, as noted, the Hellman Property is an active oil field. This ability to tolerate such disturbance also makes translocation of this species very easy, as long as receptor sites have suitable soils and competition from weedy competitors is limited.

Because this species has declined across its range, mitigation for impacts is appropriate; however, determination of Environmentally Sensitive Habitat Area (ESHA) as defined by the California Coastal Act for areas occupied by this species is not always warranted due to the ability of this species to colonize highly disturbed areas as shown in Photographs 1 and 2 of Exhibit 6. Southern tarplant can colonize areas that are highly disturbed and generally would not support native vegetation, such as areas with a gravel substrate and cracks in concrete. It can also occur with non-native halophytes such as small-flowered iceplant. Such areas are themselves in need of rehabilitation in order to reestablish native habitat that could include southern tarplant as a component. As such, determination of ESHA for areas occupied by this species should consider the specific habitat types that the species is associated with

A population of approximately 1,072 individuals was detected during focused surveys in the Study Area in 2022, of which 457 were in established fuel modification zones for oil field operations, and 615 were not within fuel modification zones. Exhibit 4 depicts the locations of southern tarplant within the Study Area, and also includes the locations of southern tarplant observed in 2009 and 2010.

3.1 Impacts to Southern Tarplant

The project would result in direct impacts to southern tarplant due to installation of the solar array. Of the 615 tarplant in the Study Area not located in established fuel modification zones, a total of 83 southern tarplant covering 0.03 acre would be impacted, of which 57 are located in the temporary impact area and 29 in the permanent impact area.

4.0 HABITAT MITIGATION AND MONITRING PLAN

This section sets forth the components of the southern tarplant Habitat Mitigation and Monitoring Plan (HMMP) including:

- Existing conditions within Project Site area occupied by southern tarplant
- Existing conditions within proposed translocation site
- Seed collection from donor/impact population
- Preparation of translocation site
- Plant palette for translocation site
- Broadcasting seed at translocation site
- Five-year maintenance program
- Five-year monitoring program
- Five-year reporting requirements

4.1 Existing Conditions for Project Area Occupied by Southern Tarplant

The Study Area is located within the Hellman Property oil field and consists of disturbed land with existing oil wells, and pipes, and associated infrastructure, internal roads, and open fields. The vegetation communities are generally disturbed with a substantial component of non-native species. The topography is flat, with elevations ranging from 2 feet above mean sea level (AMSL) in the southeast portion of the Study Area to 8 feet AMSL in the northwest portion of the study area. Soils within the Study Area consist of Bolsa silty clay loam [Exhibit 7 – Soil Map]. The Project site consists of adjacent flat fields separated by an oil access road.

The westerly portion of the field that is occupied by the southern tarplant consists entirely of ***Distichlis spicata*** **herbaceous alliance (salt grass flats)** ***Distichlis spicata*** **– annual grasses (41.200.13).** The area occupied by southern tarplant is dominated by *Distichlis spicata* but with a substantial component of annual grasses ranging from 5 to 45 percent relative cover, including ripgut, wild oat, hare barley, and Mediterranean barley. Southern tarplant is also present as individuals, small clumps and larger clumps. This area also has a few small, isolated patches of alkali heath that are not large enough to comprise a separate mapping unit. The membership rules for this alliance require that *Distichlis spicata* have greater than 50 percent relative cover in the herbaceous layer, and higher cover than any other grass species. The *Distichlis spicata* – annual grasses association has no state rarity rank; however, the alliance has an S4 rarity rank.

4.2 Existing Conditions for Area Subject Southern Tarplant Translocation

A candidate tarplant translocation mitigation area within the Hellman Property is shown on Exhibit 9, and totals approximately 1.27 acre. The candidate southern tarplant translocation area has flat topography similar to the impact area and supports a mix of non-native grasses and forbs including black mustard (*Brassica nigra*), summer mustard (*Hirschfeldia incana*), wild radish (*Raphanus sativus*) and non-native grasses such as rip gut, slender wild oats, and hare barley. The area occupied by southern tarplant to be impacted by the Project totals 0.03 acre, and therefore a portion of the candidate translocation area covering at least 0.12-acre (4:1 mitigation to impact ratio) will ultimately be identified as the mitigation site depending on site-specific conditions. Prior to selection of the final translocation area, additional site-specific analysis of soils will be conducted to determine the most suitable area for tarplant translocation.

4.3 Seed Collection from Donor/Impact Population

As noted, southern tarplant is an annual plant that tolerates disturbance including mowing and disking which help to distribute seed within such disturbed habitats. In most years, this species begins flowing in June or July and can flower into October or November with seed set typically occurring between August and late November. Seed would be collected from all plants to be impacted, which would require several seed collection visits as seed ripens. To collect seed, flowering heads with ripe seed are cut with pruning shears and collected in paper bags or cardboard file boxes. It is not necessary to clean or otherwise process the collected material. The collected seed heads would be stored in a cool, dry environment until introduction to the translocation site.

To ensure that all available seed is collected, a qualified biologist will monitor the existing localities of southern tarplant to determine when the seeds are ready for collection. The seed will be collected by personnel with experience in the collection of seeds. As noted, by removing all seed heads from plants to be impacted by hand using pruning shears, all available seed would be collected for distribution at the mitigation site. Additional seed collection for subsequent years from the extant population would be limited to no more than five percent of the existing population in any single year.

4.4 Preparation of Translocation Site

As noted, the translocation site is dominated by non-native grasses and forbs. To prepare the site for introduction of tarplant, the non-native weeds will be removed through a grow-and-kill program that will require two to three grow-and-kill cycles. The grow and kill cycles will depend on natural rainfall and/or irrigation based on the amount and timing of the rainfall. The grow-and-kill cycle would begin with winter rains and extend into spring and early summer as determined necessary by the project biologist. If determined necessary, the grow-and-kill programs could be extended into a second season based on the judgment of the Project Biologist.

As discussed above, additional soils analysis will be conducted prior to selection of the final mitigation site. Based on the soils map for the site, the translocation site and the impact site exhibit similar soils. Southern tarplant prefers heavier soils with a clay component, and as such, if the top layer of soil is determined to be unsuitable, then site preparation will include excavation of the top layer of soil to expose the underlying soils which would be suitable.

4.5 Plant Palette for Translocation Site

In addition to the southern tarplant, other native plants would be incorporated into the translocation site to enhance the habitat value and to reduce weed cover over the long term.

Table 4-2: Plant Palette for Translocation Area

Species Latin Name	Species Common Name	Seed Amount/Acre
Malvella leprosa	Alkali sida	4 lbs/acre
Cressa truxillensis	Alkali weed	4 lbs/acre
Centromadia parryi ssp. *australis*	Southern tarplant	Hand-Collected Seed

4.6 Broadcasting Seed at Translocation Site

Seed introduction will occur before the rainy season between October 1 and October 15. Should seed collection occur past October 15, such seed would be distributed at the time of collection. The southern tarplant seed heads would be distributed by hand broadcasting collected plant material across the translocation site and raking in using a hand rake. Additional seed would be hand broadcast across the site and raked in along with the southern tarplant seed.

4.7 Five-Year Maintenance Program

Maintenance Activities

The purpose of this program is to ensure the success of the mitigation planting. Maintenance will occur over the five-year life of the project. Once reintroduction is completed the habitat restoration specialist will schedule a meeting with key members of the landscape maintenance crew to identify proper maintenance procedures. The following tasks will be performed as general maintenance duties:

Weeding

Because southern tarplant does not emerge until late spring and does not flower until June or July, the potential for removing this species accidentally during weeding is high. Therefore, no weeding will be performed in areas where southern tarplant is introduced until the area is surveyed by the project biologist to determine whether southern tarplant has germinated and emerged in vegetative form. If southern tarplant has emerged, individuals will be flagged and the project biologist will review the site with maintenance crews to identify the southern tarplant to ensure they are not affected during weeding. Weeding will be done by hand and no herbicides will be used within the southern tarplant reintroduction areas once southern tarplant is present. As noted above, herbicides can be used during the grow-and-kill cycle but will be terminated once seeding of the tarplant and native plant palette occurs. In addition, devices such as weed whips can be used to remove heavy weed infestations in the vicinity of the tarplant under the supervision of the project biologist.

Trash Removal

All debris of human origin will be removed from the mitigation area on a regular basis. The appearance of the mitigation area will be well maintained to deter vandalism and dumping.

Responsible Parties

Hellman Properties will be responsible for financing and carrying out maintenance activities and may assign the maintenance responsibilities to an appropriate contractor but will retain ultimate responsibility for maintenance of the mitigation site.

Schedule

Maintenance visits will be scheduled as necessary to ensure that the mitigation site is maintained free of trash and is not disturbed by other maintenance activities. The maintenance schedule provides for 12 visits for the first year, and six visits per year for the second through fifth years to maintain the site.

4.8 Five-Year Monitoring Program

Performance Criteria

The goal of the mitigation program is to establish southern tarplant within a 0.12-acre portion of the 1.27-acre candidate translocation site, such that the site supports a minimum of 332 individuals (4:1 mitigation ratio for impacts to 83 individuals) during at least two seasons during the five-year monitoring period. In addition, non-native cover within the translocation site will be maintained at less than 25-percent throughout the five-year monitoring period.

First-Year Monitoring
Southern tarplant typically flowers between July and October with peak flowering typically occurring in August or September. Monitoring of the translocated population will begin in June and will be conducted every two weeks until peak flowering occurs. When peak flowering occurs, as determined by the project biologist, counts will be obtained for the reintroduced populations.

Success Standard: 1) Reintroduced populations to achieve 332 individuals.
2) Translocation site to exhibit less than 25-percent non-native cover.

If the reintroduced populations do not achieve 332 individuals, additional seed will be collected from the existing populations (not to exceed five percent of donor population) at Hellman Properties and the seed introduced in the mitigation area. A yearly report will be submitted by December 31 to the City of Seal Beach and California Department of Fish and Wildlife (CDFW) that summarizes the performance of the reintroduction program for southern tarplant. In addition, the report will include recommendations for improving the success of the program and will also include potential remedial measures, such as increased maintenance, as potential problems are noted.

Second-Year Monitoring
Monitoring of the translocated population will begin in June and will be conducted every two weeks until peak flowering occurs. When peak flowering occurs, as determined by the project biologist, counts will be obtained for the reintroduced populations.

Success Standard: 1) Reintroduced populations to achieve 332 individuals.
2) Translocation site to exhibit less than 25-percent non-native cover.

If the reintroduced populations do not achieve 332 individuals, additional seed will be collected from the existing populations (not to exceed five percent of donor population) at Hellman Properties and the seed introduced in the mitigation area. A yearly report will be submitted by December 31 to the City of Seal Beach and California Department of Fish and Wildlife (CDFW) that summarizes the performance of the reintroduction program for southern tarplant. In addition, the report will include recommendations for improving the success of the program and will also include potential remedial measures, such as increased maintenance, as potential problems are noted.

Third-Year Monitoring
Monitoring of the translocated population will begin in June and will be conducted every two weeks until peak flowering occurs. When peak flowering occurs, as determined by the project biologist, counts will be obtained for the reintroduced populations.

Success Standard: 1) Reintroduced populations to achieve 332 individuals.
2) Translocation site to exhibit less than 25-percent non-native cover.

If the reintroduced populations do not achieve 332 individuals, additional seed will be collected from the existing populations (not to exceed five percent of donor population) at Hellman Properties and the seed introduced in the mitigation area. A yearly report will be submitted by

December 31 to the City of Seal Beach and California Department of Fish and Wildlife (CDFW) that summarizes the performance of the reintroduction program for southern tarplant. In addition, the report will include recommendations for improving the success of the program and will also include potential remedial measures, such as increased maintenance, as potential problems are noted.

Fourth-Year Monitoring

Monitoring of the translocated population will begin in June and will be conducted every two weeks until peak flowering occurs. When peak flowering occurs, as determined by the project biologist, counts will be obtained for the reintroduced populations.

Success Standard: 1) Reintroduced populations to achieve 332 individuals.
2) Translocation site to exhibit less than 25-percent non-native cover.

If the reintroduced populations do not achieve 332 individuals, additional seed will be collected from the existing populations at Hellman Properties and the seed introduced in the mitigation area. A yearly report will be submitted by December 31 to the City of Seal Beach and California Department of Fish and Wildlife (CDFW) that summarizes the performance of the reintroduction program for southern tarplant. In addition, the report will include recommendations for improving the success of the program and will also include potential remedial measures, such as increased maintenance, as potential problems are noted.

Fifth-Year Monitoring

Monitoring of the translocated population will begin in June and will be conducted every two weeks until peak flowering occurs. When peak flowering occurs, as determined by the project biologist, counts will be obtained for the reintroduced populations.

Success Standard: 1) Reintroduced populations to achieve 332 individuals.
2) Translocation site to exhibit less than 25-percent non-native cover.

If the reintroduced populations do not achieve 332 individuals, additional seed will be collected from the existing populations at Hellman Properties and the seed introduced in the mitigation area. A yearly report will be submitted by December 31 to the City of Seal Beach and California Department of Fish and Wildlife (CDFW) that summarizes the performance of the reintroduction program for southern tarplant. In addition, the report will include recommendations for improving the success of the program and will also include potential remedial measures, such as increased maintenance, as potential problems are noted.

If performance standards are not achieved during the five-year monitoring program, Hellman Properties will consult with CDFW to determine whether corrective measures and an extension of the five-year monitoring program will be necessary.

4.8 Annual Monitoring Reports

An annual report shall be submitted to the City of Seal Beach and CDFW by January 1 of each year for 5 years after planting. Photos from designated photo stations shall be included.

At the end of each of the five-monitoring period growing seasons, for the duration of the monitoring period, an annual report will be prepared for submittal to the City of Seal Beach and CDFW. The first annual report shall be delivered on January 1st of the year following the first quantitative monitoring. These reports shall include the number of southern tarplant during each of the five monitoring seasons as well as the non-native cover. These reports will assess both attainment of yearly target success criteria and progress toward final success criteria. These reports will also include the following:

- A list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year;
- A vicinity map indicating location of the mitigation site(s);
- A mitigation site map identifying habitat types, transect locations, photo station locations, etc. as appropriate;
- Description and evaluation and any and all of maintenance performed;
- Description of additional seeding performed as necessary including location of source population(s) and per
- Copies of all monitoring photographs from designated photo stations;
- Copies of all completed field data sheets; and
- An analysis of all qualitative and quantitative monitoring data.

5.0 COMPLETION OF COMPENSATORY MITIGATION

5.1 Notification of Completion

The Project Biologist should notify Hellman Properties, the City of Seal Beach, and CDFW in writing when the monitoring period is complete and the City-approved success criteria have been met.

5.2 Final Performance Standards Resolution

If the project meets performance standards at the end of the five-year monitoring period, the translocation be considered a success. If not, the maintenance and monitoring program will be extended one full year at a time, and a specific set of remedial measures approved by the City of Seal Beach and CDFW will be implemented until the standards are met. This process will continue until year-five standards are met or until the City of Seal Beach and CDFW determine that other mitigation measures are appropriate.

Should the translocation efforts meet all goals prior to the end of the five-year monitoring period, the City of Seal Beach and CDFW, at their discretion, may terminate the monitoring effort and release the bond. At that time the Applicant/Permittee will be released from further maintenance and monitoring requirements of the mitigation area.

5.3 Agency Confirmation

Following receipt of the final annual monitoring report, the City of Seal Beach and CDFW will contact the permittee as soon as possible to schedule a site visit to confirm the completion of the compensatory mitigation effort and any jurisdictional delineation. The compensatory mitigation will not be considered complete without an onsite inspection by CDFW and written confirmation that approved performance standards have been achieved.

It is therefore critical that agency staff review annual reports on a timely basis and provide comments throughout the maintenance and monitoring program so that any project deficiencies they note can be addressed prior to the expected end of the program.

6.0 CONTINGENCY MEASURES

6.1 Initiating Procedures

If a performance standard is not met at the termination of the mitigation project or if the approved success criteria are not met, the Project Biologist will prepare an analysis of the cause(s) of failure and, if determined necessary by the City of Seal Beach and CDFW propose remedial actions for approval. If the compensatory mitigation site has not met one or more of the performance standards, the permittee's maintenance and monitoring obligations shall continue until the City of Seal Beach and CDFW gives final approval the mitigation obligations have been satisfied. It is therefore incumbent upon the Project Biologist to foresee project deficiencies as part of the monitoring program and take appropriate steps to address the situation.

6.2 Alternative Locations for Contingency Mitigation

Sufficient area for establishment of the mitigation site is available so alternative locations would be unnecessary. Although this plan is expected to be successful, both onsite and off-site alternative locations may be used in the event that revegetation cannot be achieved.

6.3 Funding Mechanism

The Applicant/Permittee will fund planning, implementation, maintenance, and monitoring of any contingency measures that may be required to achieve mitigation goals through an up-front payment to the Contractor. Thereafter, all expenses in implementing this mitigation plan are to be borne by the Contractor.

6.4 Responsible Parties

The Applicant/Permittee will be responsible for implementing, maintaining, and monitoring any contingency procedures.

7.0 LONG-TERM MANAGEMENT PLAN AND ASSOCIATED FUNDING

Upon completion of and acceptance by the City of Seal Beach and CDFW that the five-year performance standards have been achieved, implementation of a Long-Term Management Plan (LTMP) will begin. With the successful completion of the mitigation and the achievement of the performance standards, it is expected that the tarplant area will require only limited management activities that would include the following:

(1) Ongoing Monitoring,
(2) Ongoing Non-Native Invasive Vegetation Control,
(3) Trash and Debris Removal.

7.1 Monitoring Tasks

A qualified Biological Monitor shall be retained to assist in implementing the LTMP and to monitor the status of the LTMP for tarplant mitigation area. The activities to be conducted by the Biological Monitor are as follows.

Activity: Annual Monitoring. Conduct annual monitoring of the Long Term Management Area to determine what management activities are needed and where to focus those activities.

Activity: Work Planning. Prepare an annual work plan and coordinate with the maintenance contractor(s) to carry out the management activities including the need for non-native species removal, trash and debris removal, or other management activities.

Activity: Data Collection. Document qualitative and quantitative data related to the implementation of management activities.

Activity: Annual Reporting. At the end of the first year, and then every other year, a management report will be prepared by the Biological Monitor and will be submitted to the City of Seal Beach and CDFW. These reports will include:

(a) A description of the maintenance activities conducted during that calendar year;

(b) The date of and location where the management activities were undertaken;

(c) Information regarding weed eradication/abatement, including the amount removed and treated, frequency and timing of removal and treatment, and disposal specifics; and

(d) Photos from designated photo stations.

7.2 Funding and Prioritizing Tasks

7.1.1. Funding

Prior to impacts associated with the project, the amount of a non-wasting endowment will be determined that will be necessary to fund the annual cost of carrying out the LTMP activities described above, if approved by the City of Seal Beach and CDFW. If approved by the City of Seal Beach and CDFW, the endowment will fund all management and monitoring activities associated with the LTMP. No further monetary obligations will be required of the Manager or any future long-term manager.

The endowment shall be approved by the City of Seal Beach and CDFW or designee. If a designee is approved to hold the endowment, the Agencies will require the entity to enter into an agreement that contains terms relating to management of the endowment, the periodic auditing and reporting of expenditures, earnings and other pertinent information, and provisions for the transfer of the endowment and unspent earnings to the Agencies, or a successor owner/manager under certain conditions. If approved by the Agencies, the Manager will transfer the total non-wasting endowment fund to the designee approved by the City of Seal Beach and CDFW within one year after commencement of construction.

The endowment will be placed in an interest-bearing security for the sole purpose of carrying out the management activities described above. The Manager will have access to the interest generated by the endowment and will be able to draw on the funds throughout the year to carry out the management activities.

7.1.2. Prioritizing Tasks

The anticipated that the activities to be conducted annually will include monitoring, trash and debris removal, invasive plant control and management reporting. Invasive vegetation removal is the activity that will occur in perpetuity, but because of the dynamic nature of biological systems, is an activity that may not need to occur every single year. Other management activities might be added as part of the adaptive management of the LTMA, but these activities are not anticipated at this time.

Each year the Manager and Biological Monitor will develop a Work Plan that prioritizes the mandatory management activities and other adaptive management activities based on natural resource conditions for that year. How the annual draw on the endowment will be spent will be determined based on this prioritized Work Plan.

Because the management needs will vary from year to year, any unspent interest would be left in the interest-bearing security and could be utilized the following year(s). This adaptive funding mechanism provides the necessary flexibility for the Manager to allocate funds toward those management activities that require attention for that particular year and to plan ahead for implementation of management activities that become necessary in the future.

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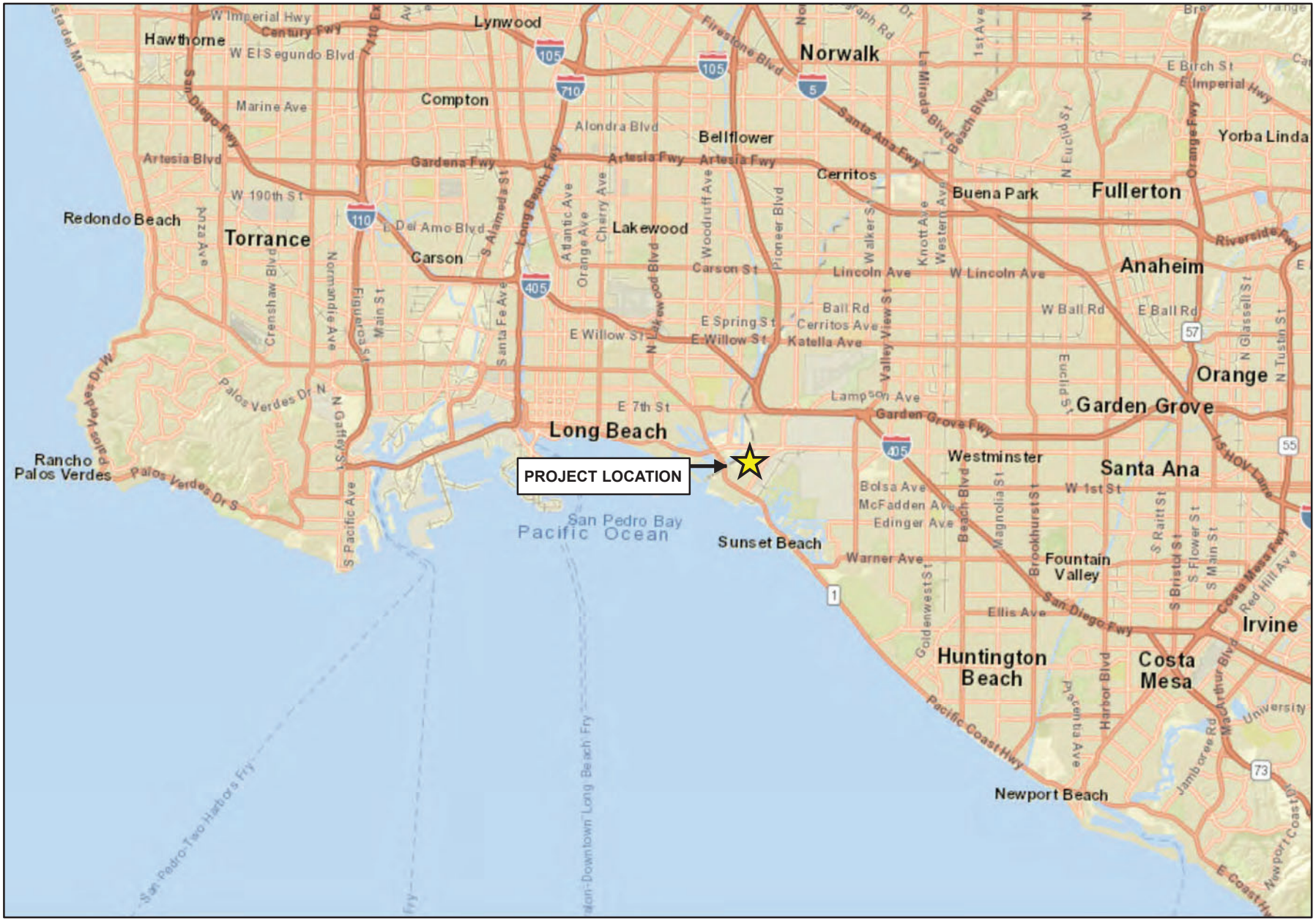
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s:0200-8b.Tarplant Restoration Plan tracked



Source: ESRI World Street Map

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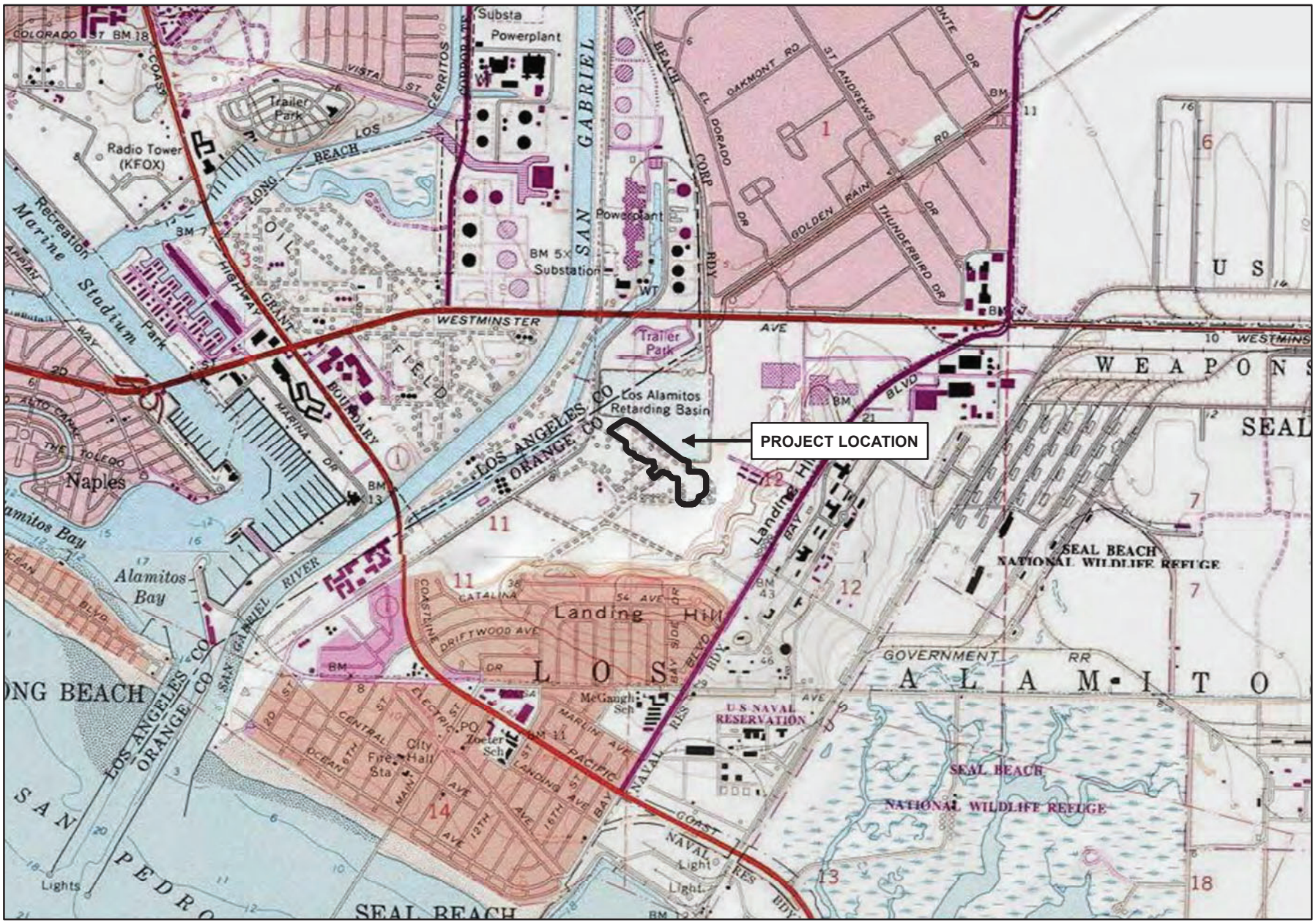
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HELLMAN PROPERTY
SOLAR PANEL ARRAY

Regional Map

GLENN LUKOS ASSOCIATES

Exhibit 1



Adapted from USGS Los Alamitos, CA quadrangle

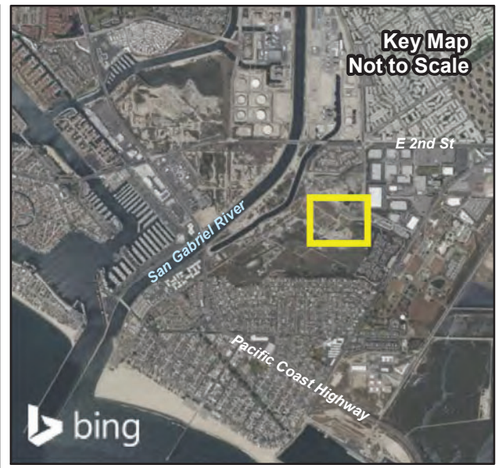
HELLMAN PROPERTY
SOLAR PANEL ARRAY

Vicinity Map

GLENN LUKOS ASSOCIATES

Exhibit 2





Study Area

Permanent Impacts

Temporary Impacts

100' Buffer of Permanent Impacts

N

0 62.5 125 250

Feet

1 inch = 125 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 4, 2023

HELLMAN PROPERTY SOLAR PANEL ARRAY

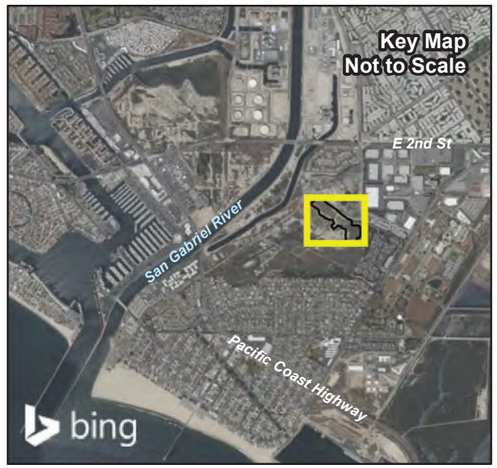
Site Plan

GLENN LUKOS ASSOCIATES

Exhibit 3

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Study Area

Existing Fuel Modification Zones

2009 Rare Plants

Coulter's Goldfields

Southern Tarplant

2010 Rare Plants

Coulter's Goldfields

Southern Tarplant

2022 Rare Plants

Southern Tarplant (1,072)

2023 Rare Plants

Coulter's Goldfields

0 62.5 125 250

Feet

1 inch = 125 feet

N

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 28, 2023

HELLMAN PROPERTY SOLAR PANEL ARRAY

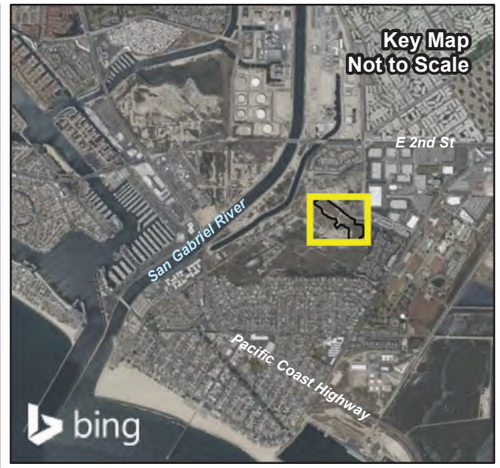
Special-Status Species Map

GLENN LUKOS ASSOCIATES

Exhibit 4

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Study Area

Existing
Fuel Modification Zones

N

0 62.5 125 250

Feet

1 inch = 125 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 28, 2023

HELLMAN PROPERTY
SOLAR PANEL ARRAY

Vegetation Map

GLENN LUKOS ASSOCIATES

Exhibit 5

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Photograph 1: West-facing view of southern tarplant growing on the edge of a road. July 29, 2022.



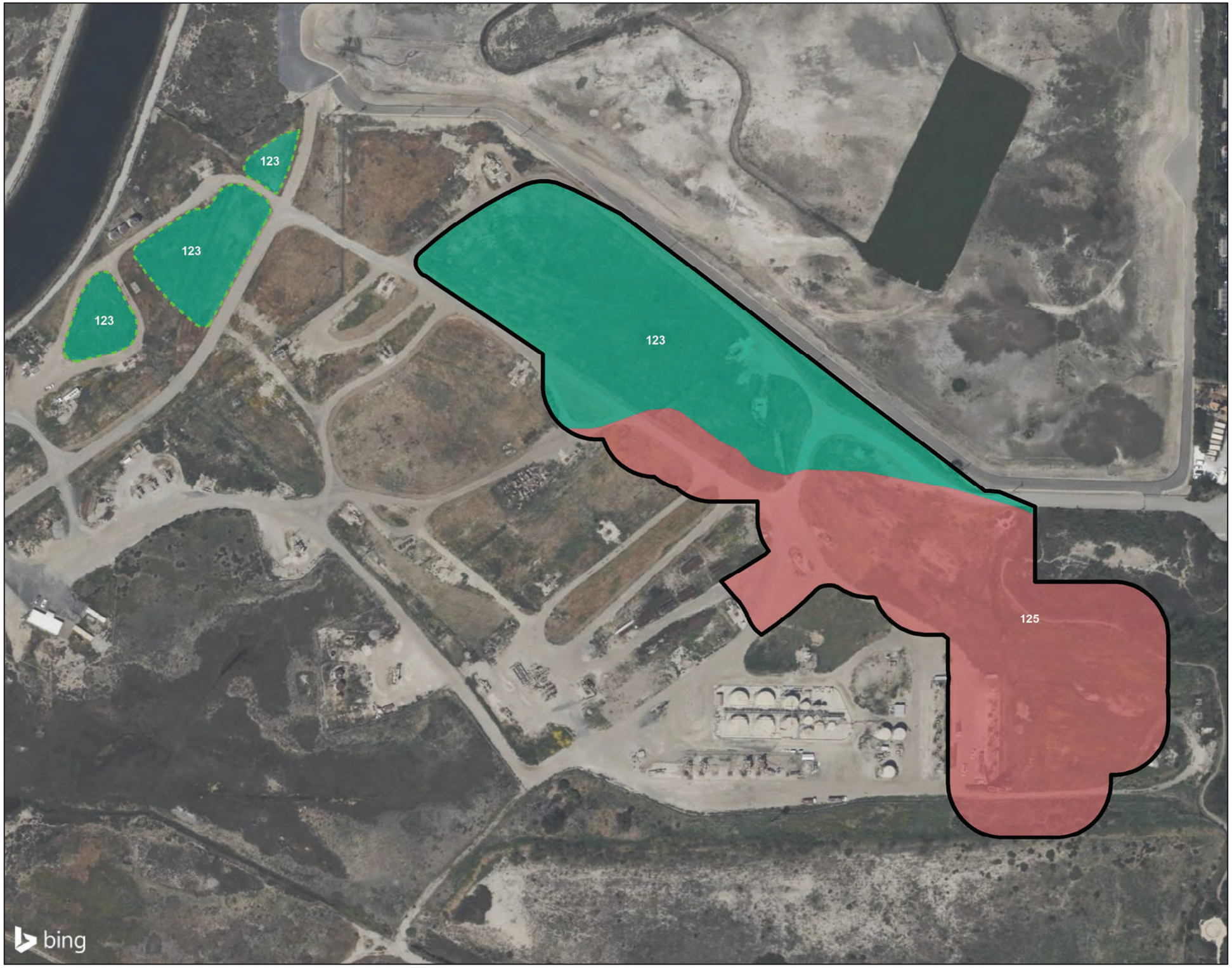
Photograph 2: Southern tarplant growing in a highly disturbed roadside area. July 29, 2022.

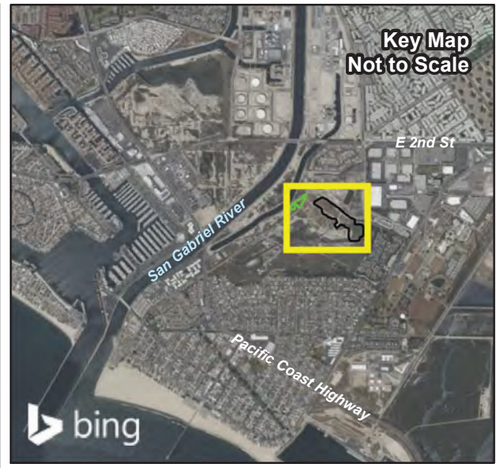
GLENN LUKOS ASSOCIATES

Exhibit 6

HELLMAN PROPERTY SOLAR PANEL ARRAY

Site Photographs





Study Area

Southern Tarplant Translocation Area

123 Bolsa Silt Loam, Drained

125 Bolsa Silty Clay Loam, Drained

N

0 87.5 175 350

Feet

1 inch = 175 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 29, 2023

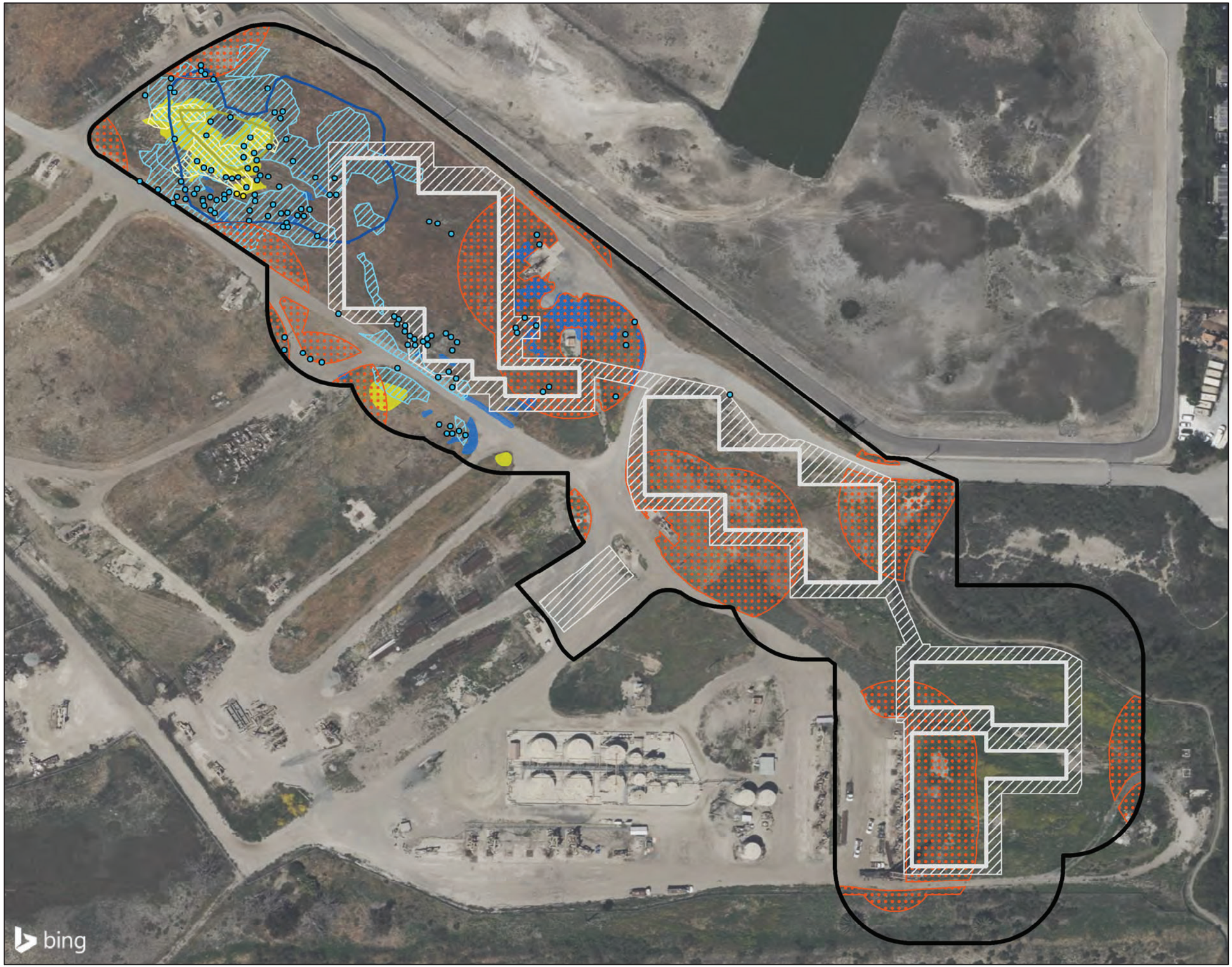
HELLMAN PROPERTY SOLAR PANEL ARRAY

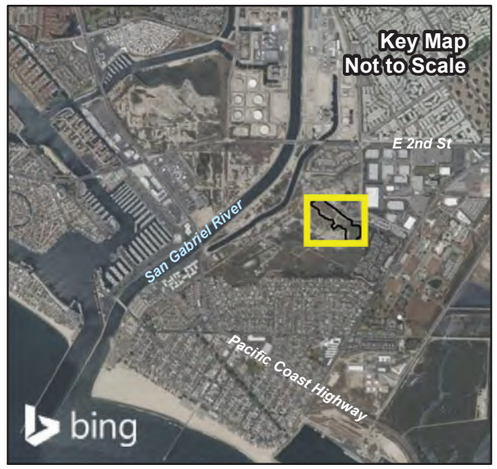
Soils Map

GLENN LUKOS ASSOCIATES

Exhibit 7

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Study Area

Permanent Impacts

Temporary Impacts

Existing Fuel Modification Zones

2009 Rare Plants

Coulter's Goldfields

Southern Tarplant

2010 Rare Plants

Coulter's Goldfields

Southern Tarplant

2022 Rare Plants:

Southern Tarplant (1,072)

2023 Rare Plants:

Coulter's Goldfields

0 62.5 125 250

Feet

1 inch = 125 feet

N

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 28, 2023

HELLMAN PROPERTY SOLAR PANEL ARRAY

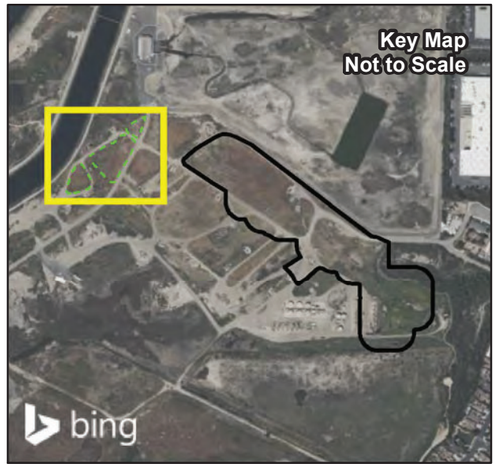
Special-Status Species Impacts Map

GLENN LUKOS ASSOCIATES

Exhibit 8

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Study Area

Southern Tarplant Candidate Translocation Area (1.27 ac.)

N

0 25 50 100

Feet

1 inch = 50 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 28, 2023

HELLMAN PROPERTY SOLAR PANEL ARRAY

Southern Tarplant Translocation Area

GLENN LUKOS ASSOCIATES

Exhibit 9

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Appendix G

Cultural Resources Assessment Report

AECOM
401 West A Street
Suite 1200
San Diego, CA 92101
aecom.com

April 26, 2023

Ms. Devon Shay
Hellman Properties, LLC
1 Pacific Coast Highway
Seal Beach, CA 90740

Subject: Cultural Resources Assessment Report for a Proposed Solar Array, Hellman Ranch Oil and Gas Production Facility, Seal Beach, California

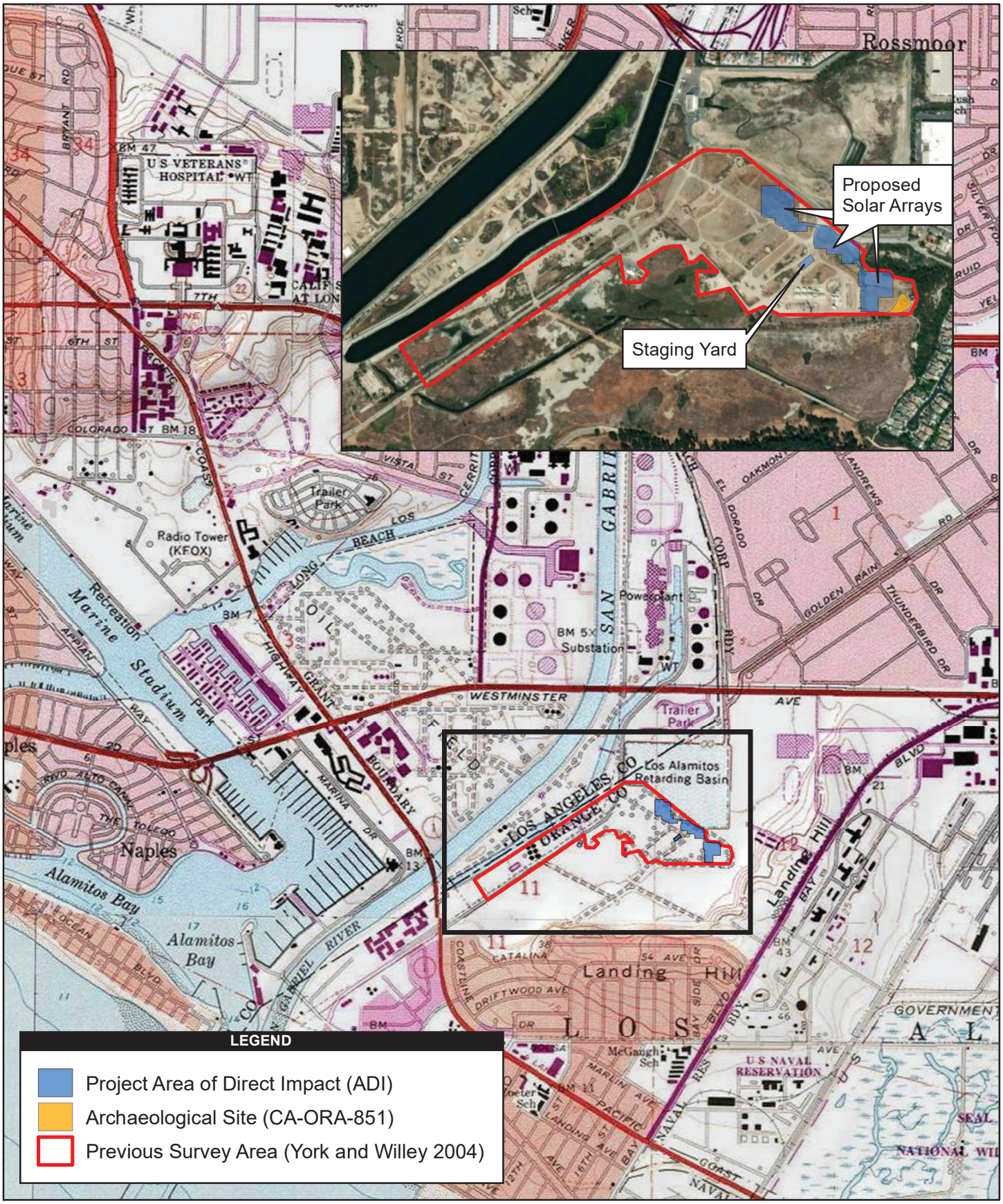
Dear Ms. Shay,

The following presents a report of the cultural resources assessment conducted by AECOM for the proposed solar array (Project) at the Hellman Ranch Oil and Gas Production Facility (OGPF) property located in the City of Seal Beach (City), Orange County, California. As discussed below, the proposed Project area has been surveyed or otherwise investigated for cultural resources on at least five different occasions, including exploratory subsurface trenching, and no cultural resources have been identified that would be affected by the proposed solar array installation. Additionally, the Project area is included in a recent cultural resources records search in support of a proposed gas plant just to the southwest, again indicating that no known cultural sites are present that would be affected by the proposed solar array installation.

Because the area of the proposed solar array is completely encompassed by these previous studies, no new field investigations were conducted for the present assessment. This assessment has been completed in accordance with Section 15064.5(a)(2)-(3) of the CEQA, and the guidelines for preparation of archaeological reports by the Office of Historic Preservation (OHP 1990). It also complies with Sections 1.C.1 and 1.C.2 of the Cultural Resources Element of the City of Seal Beach General Plan, which require literature searches and archaeological field surveys prior to development entitlements.

Project Description

The Project area is located in northern Orange County, California, approximately 1.2 miles northeast of the Pacific Ocean and 1.5 miles southwest of Interstate 405 (San Diego Freeway) (Figure 1). The Project area is within the existing Hellman Ranch OGPF, which is bounded roughly by the San Gabriel River to the west, residential areas to the north and south, and residential and industrial uses to the east.



Source: National Geographic Society 2013, Hellman Properties, LLC

2,000 0 2,000 Feet

Scale: 1:24,000 1 in = 2,000 feet

Figure 1
Project Area

The Project would consist of the construction of a ground mounted solar photovoltaic (PV) plant including PV modules, grid-interactive inverters, and racking structures. The plant will consist of 56 solar arrays spaced 8 feet apart and supported by concrete piers set 18 inches below grade. For the purposes of this assessment, the Project area is defined as all areas that would be subject to direct disturbance from installation of the photovoltaic plant, including the use of construction staging areas. The footprint of the areas subject to direct ground disturbance are shown as Areas of Direct Impact (ADI) in Figure 1.

Project Setting

The Hellman property is bordered to the northwest by the channelized San Gabriel River and the Haynes Cooling Channel. Wetlands owned by the Los Cerritos Wetland Authority are south of the Hellman property. Also to the south, at the foot of Landing Hill, is the City-owned Gum Grove Park, while to the east the northern portion of Landing Hill has been developed for residential use.

Natural Environment

At an elevation of approximately three feet above sea level, the Project area is within the area formerly covered by wetlands associated with Alamitos Bay, an extensive tidal estuary at the mouth of the San Gabriel River. Alamitos Bay was one of several large estuaries along the coast of northern Orange County (along with Anaheim Bay, Bolsa Bay, and Newport Bay) that were formed as rising sea levels flooded the coastal drainages during the early Holocene (ca. 8000–10,000 years before present [B.P.]). Initially, these consisted of open, relatively deep embayments during the rapid sea level rise that occurred before about 6000 B.P. These provided abundant fish and shellfish to prehistoric groups that moved among resource patches along their margins. As sea levels stabilized between about 6000–4000 B.P., silt began to accumulate along the inland edges of the embayments, forming extensive tidal wetlands and mudflats. This appears to be the time that the estuaries reached their maximum productivity of resources important to prehistoric Native Americans. Eventually, the siltation proceeded to the point that shellfish habitat was restricted, limiting their utility as an economic resource for prehistoric populations.

Although in the recent past the Project area was covered by the mud flats and marshes of Alamitos Bay, several thousand years ago some of the Project area may have been dry land. Before the stabilization of sea levels at mid-Holocene, the surface of Alamitos Bay would have been lower, and low terraces to the north and west of Landing Hill may have been exposed and available for human habitation. As sea levels rose, the margins of the bay would have expanded, eventually covering those areas with alluvium.

Cultural Setting

Coastal areas of southern California appear to have been occupied by humans for at least 10,000 years. Archaeological evidence suggests the earliest inhabitants were well adapted to marine habitats, exploiting shellfish and other marine resources found along the coastline (Dixon 1999; Erlandson 1994; Vellanoweth and Altschul 2002). Although these early sites are uncommon, archaeological components increase dramatically in number after about 8000 years before present

(B.P.), indicating expanding populations. This period, known regionally as the Millingstone Period due to the abundance of handstones and milling slabs in archaeological sites, saw the establishment of numerous settlements located adjacent to local lagoons and estuaries that supported edible plant, animal, and marine resources (Drover et al. 1983).

By approximately 3500–3000 B.P., settlement patterns shifted to reflect more sedentary and territorial lifestyles. The number of sites decreased as populations settled into residential bases near freshwater sources and seasonal camps became more infrequent (Koerper et al. 2002). By around 1500 B.P., new patterns emerged that are associated with the florescence of the contemporary Native American group known as the Gabrielino, or Tongva, who occupied what is presently Los Angeles County and northern Orange County, along with the southern Channel Islands (Kroeber 1925). Settlement at this time is believed to have consisted of dispersed family groups that revolved around a relatively limited number of permanent village settlements that were located centrally with respect to a variety of resources (Koerper et al. 2002). The nearest of these village settlements to Landing Hill was the ethnographic village of *Puvungna*, located in what is now Long Beach just north and west of the Project area.

In 1834, the Project area became part of Rancho Los Alamitos, which covered portions of southwestern Los Angeles and northwestern Orange Counties. The rancho was purchased in 1844 by Abel Stearns, who in 1881 sold it to Isaias Hellman, who built a ranch house near the north end of Landing Hill. At that time, the area surrounding the Project area was used for farming and cattle ranching. The property was developed for oil and gas production in the early-middle twentieth century and is currently owned by Hellman Properties, LLC.

Previous Cultural Resources Investigations

In 2019, a records search was conducted at the South Central Coastal Information Center (SCCIC) at California State University at Fullerton in support of a proposed gas plant to be located approximately 320 feet southwest of the current project area (Wahoff 2019). The results of this records search, including previous surface and subsurface investigations and known cultural resources, are discussed below.

Previous Surveys

The 2019 records search revealed that at least 18 previous cultural resources surveys or other archaeological investigations have been conducted within 0.25 mile of the current Project area, and that the entire Project area has been intensively surveyed for archaeological resources on at least four occasions (Archaeological Associates 1980; Rosenthal and Padon 1990; Stickel 1996; York and Willey 2004). None of these field surveys revealed any cultural resources within the Project area, although one (Archaeological Associates 1980) noted two dispersed scatters of marine shell (CA-ORA-850 and -851) located approximately 500 and 50 feet east and northeast of the Project area, respectively. Other cultural resources within 0.25 mile include CA-ORA-257, -258, and -259, all consisting of remnants of prehistoric shell middens along the crest of Landing Hill to the south of the Project area (Redwine 1958; Stickel 1996; Cleland et al. 2007); P-30-01544, a large but dispersed scatter of marine shell and artifacts located on the Boeing

property immediately north of Adolfo Lopez Drive (Underwood 2000); and the Los Alamitos Pump Station, approximately 550 feet north of the Project area (Shepard 2002).

Table 1. Previously Recorded Cultural Resources within 0.25 mile of Project Area

Primary Number	Trinomial	Description	Time Period
P-19-186926	N/A	Alamitos Pump Station	Historic
P-30-000257	CA-ORA-257	Shell midden, groundstone and flaked stone implements	Prehistoric
P-30-000258	CA-ORA-258	Shell midden; groundstone and flaked stone implements; polishing stone, debitage	Prehistoric
P-30-000259	CA-ORA-259	Shell midden; groundstone and flaked stone implements; debitage	Prehistoric
P-30-000850	CA-ORA-850	Shell scatter	Prehistoric
P-30-000851	CA-ORA-851	Shell scatter	Prehistoric
P-30-001544	N/A	Shell scatter; mano; hammerstone	Prehistoric

The most recent surface survey that included the current Project area (York and Willey 2004) also identified four scatters of marine shell elsewhere within the Hellman property. These contained no prehistoric artifacts and were all mixed with gravel, asphalt, and various recent debris. These and other shell-bearing surface deposits in the project area were interpreted as dredge spoil mixed with imported fill that was used to infill the former marshlands associated with Alamitos Bay at this location.

Previous Subsurface Investigations

Although several extensive archaeological excavations have been conducted along the crest of Landing Hill just to the south and east of the Project area (Cleland et al. 2007; Desautels 1981; Redwine 1958; Stickel 1996), subsurface investigation in the lower elevations within the Hellman Ranch OGPF have been limited to an unreported testing program at CA-ORA-851 by LSA Associates in 1990, and an exploratory archaeological trenching program by EDAW, Inc. in 2006.

LSA Testing at CA-ORA-851 In 1990, LSA Associates initiated an extensive subsurface testing program for a planned residential development on a portion of Landing Hill just to the east of the Project area. This testing program included several large prehistoric sites along the crest of the hill (CA-ORA-260, -261, -262, and -263), as well as site CA-ORA-851, which is located approximately 50 feet to the east of the present Project area. Although the LSA testing program included the excavation of more than 100 test units among the five sites, the project was discontinued before a report was completed and the artifacts have since disappeared (see Cleland et al. 2007; York 2006). However, York (2006) reported that field forms provided to EDAW, Inc. by LSA indicated that two 1-by-1 meter (m) test units were excavated at CA-ORA-851, both yielding only small amounts of marine shell. The shells were limited to the upper 20 cm of the

deposit, in a highly disturbed context that also included imported fill and construction debris. Below this disturbed layer, according to the LSA field notes, were natural sediments containing no shells.

Exploratory Trenching by EDAW, Inc. (York 0): In 2006, EDAW, Inc. conducted a program of exploratory archaeological trenching at various locations throughout the Hellman Ranch OGPF in support of a proposed underground tank farm replacement project (York 2006). A total of 31 trenches were excavated, including 20 along proposed pipeline alignments and 11 within the footprint of the proposed tank farm. Each trench measured approximately 10 m long and between 120 and 200 centimeters (cm) deep. Of the 31 trenches, 4 were placed within or immediately adjacent to the present Project area: trenches 1, 2, and 20 in the far southeastern portion, and Trench 6 in the northwestern portion (Table 2).

Table 2. Exploratory Trenches Reported by EDAW, Inc. within Project Area (York 2006)

Trench	Depth	Description
1[1]	0-40 cm	Disturbed mix of natural sediments and artificial fill; contains small amount of marine shell
	40-120 cm	Natural alluvial/estuarine sediments – no cultural material
2	0-120 cm	Natural estuarine and alluvial sediments – no cultural material
6	0-30 cm	Disturbed silty clay loam – no cultural material
	30-120 cm	Natural estuarine and alluvial sediments – no cultural material
20	0-120 cm	Natural estuarine and alluvial sediments – no cultural material

[1] Partially within the recorded boundary of CA-ORA-851

The results of the 2006 trenching program within the present Project area (York 2006) are shown in Table 2. Trench 1, placed at the northern boundary of CA-ORA-851, appears to confirm the field notes for the LSA excavations: the upper 40 cm is clearly disturbed and contains sand, gravel, sparse marine shell, and recent debris. Underlying this were apparently undisturbed alluvial or estuarine fine sand, silt, and clay sediments that contained no shell. On this basis, York (2006) concluded that CA-ORA-851 likely represents an artificial fill deposit composed in part from sediment dredged from nearby Alamitos Bay.

Cultural Resources Assessment and Recommendations

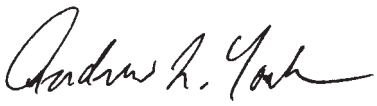
Several previous intensive archaeological surveys that have included portions of the Hellman Ranch OGPF revealed no archaeological resources within the present Project area. Of the seven cultural resources that have been previously recorded within 0.25 mile of the Project area, only one, CA-ORA-851, is closer than approximately 500 feet to areas subject to direct disturbance from the proposed solar array construction. This resource, a dispersed scatter of marine shell fragments, was subject to subsurface archaeological examinations in 1996 and 2006, both of which indicated that the deposit most likely represents recently imported fill materials. It would

not be affected by the proposed solar array construction. Additionally, the rest of the 2006 exploratory trenching program designed to identify buried archaeological resources at various locations within the Hellman Ranch OGPF was entirely negative, including at several locations within the present Project area (York 2006).

These results indicate that the archaeological sensitivity of the Project area is generally low, at least in near-surface contexts. During the late prehistoric and early historic periods, the Project area was within the low, marshy areas associated with Alamitos Bay and would have been regularly inundated and generally unsuitable for more than occasional habitation. However, as noted in previous studies, the lowlands at this location are largely mantled by either recent alluvium or artificial fill that could obscure older surfaces that could have supported habitation earlier in the Holocene when sea levels were lower than present. Moreover, the possibility for non-habitation archaeological activities, such as human interments, should be considered for these lowland contexts – particularly in view of the extensive mortuary complex that was identified nearby along the crest of Landing Hill (Cleland et al. 2007). Finally, it is also possible that archaeological materials associated with the historic period use of this locality – perhaps refuse deposits from the early Hellman Ranch, or early twentieth century industrial remains – could also be encountered.

For these reasons, it is recommended that a qualified archaeologist and a Native American cultural monitor be present during ground-disturbing activities associated with construction of the solar facility. Should potentially significant archaeological resources be encountered, construction would be suspended while a treatment plan is developed in consultation with the City, Hellman Properties, and tribal representatives as appropriate.

Sincerely,



Andrew L. York
Senior Archaeologist

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