CITY OF TWENTYNINE PALMS
SOLAR PROJECT

DRAFT
ENVIRONMENTAL IMPACT REPORT
SCH No. 2024021042

Prepared by

City of Twentynine Palms
6136 Adobe Road
Twentynine Palms, CA 92277

November 2025

CITY OF TWENTYNINE PALMS SOLAR PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT
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CITY OF TWENTYNINE PALMS SOLAR PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT

EXECUTIVE SUMMARY & ENVIRONMENTAL MATRIX

INTRODUCTION

The City of Twentynine Palms has prepared this Environmental Impact Report (EIR) to evaluate the potential environmental impacts related to the commercial solar facility (proposed Project or Project) proposed on 477± acres of land located at the northwest corner of Two Mile Road and Noels Knoll Road (extended). The City is the lead agency under the California Environmental Quality Act (CEQA) for this Project.

The EIR has been prepared in accordance with CEQA (as amended) (Public Resources Code §§21000-21189.3) and the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, §§15000-15387). Under State CEQA Guidelines §15121:

- *An EIR is an informational document which will inform public agency decision makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The public agency shall consider the information in the EIR along with other information which may be presented to the agency.*

- *While the information in the EIR does not control the agency's ultimate discretion on the project, the agency must respond to each significant effect identified in the EIR by making findings under Section 15091 and if*

necessary, by making a statement of overriding consideration under Section 15093.

- *The information in an EIR may constitute substantial evidence in the record to support the agency's action on the project if its decision is later challenged in court.*

Under State CEQA Guidelines §15123, this Executive Summary describes the proposed Project, potentially significant impacts, and required mitigation measures. Also identified in this section is a summary of the alternatives to the project evaluated in this EIR, including those that would avoid potentially significant effects; issues of concern/areas of controversy known to the Lead Agency; and issues to be resolved including the choice among alternatives and how best to mitigate the potentially significant effects.

The reader should review, but not rely exclusively on the Executive Summary as the sole basis for judgment of the proposed Project and alternatives. The complete DEIR should be consulted for specific information about the potential environmental effects and mitigation measures to address those effects.

Lead Agency Contact:
The City of Twentynine Palms is the Lead Agency under CEQA for the proposed Project. The contact person is:

Keith Gardner
Community Development Director
City of Twentynine Palms
6136 Adobe Road
Twentynine Palms, CA 92277
Email: kgardner@29palms.org
Telephone: 760-367-6799, Ext. 1008

SUMMARY OF THE PROPOSED PROJECT

The Project encompasses 477± acres and is comprised of two components:

The Solar Project consists of 241± acres of the 477± acre site, and would include 184± of land graded and improved with a 50 megawatt (MW) commercial solar generation facility. The Solar Project will include 160,000 photovoltaic solar panels mounted on 720 ground-mounted, fixed tilt solar panel racks each 104 feet wide and 252 feet long, separated by 10 foot wide service/maintenance drives. Solar Project improvements will also include inverters and transformers, electrical

cabling and communication lines, on-site switchgear, generation tie-line, a driveway extending from the south boundary of the Solar Project to Two Mile Road, and a 7 foot high security fence. Off-site improvements will include underground cabling extending and connecting the Solar Project's power supply to the Southern California (SCE) transmission network at the Carodean Substation, located approximately one-half mile west from the Project site on the south side of Two Mile Road and certain improvements to existing SCE infrastructure.

The Residential GPA portion of the Project consists of changes to the General Plan necessary to offset the Solar Project's impacts associated with Senate Bill (SB) 330. Because the Solar Project will remove 241 acres of residential land from the City's total residential supply, the applicant for the Solar Project is required to offset the loss and assure that the City does not reduce its potential housing supply. A General Plan Amendment and Rezone are proposed to change the land use and zoning designations on the 119 acres of RL-5 designated land of parcels 0612-201-01 and 0612-201-05 south of the Solar Project. The GPA and Rezone will re-designate 60 acres (half of the RL-5 designated land) as Single Family Residential, 1 unit per acre (RS-1), while the remaining 59 acres remain RL-5 (see Exhibit 5). Because the Solar Project will eliminate the potential for 48 residential units (the maximum density allowed in the RL-5 designation), the GPA and Rezone will increase the density of the southerly 236 acres from the currently allowable 71 units to a maximum of 119 units. This change will therefore accommodate the 48 units which would be lost if the Solar Project is approved. There is no residential development proposed on this acreage as part of the Project. Residential units could be built in the future, when entitlement applications are filed, if the GPA and REZ are approved. Because no projects are proposed, the analysis conducted in this EIR for this component is a "first tier" analysis. Further review of project-specific impacts will be required when specific residential project(s) are proposed, as indicated throughout this document.

STATEMENT OF PROJECT OBJECTIVES

CEQA Guidelines Section 15126.6 states that an EIR must describe and evaluate a reasonable range of alternatives to a project that would feasibly attain most of the project's basic objectives, but that would avoid or substantially lessen any identified significant adverse environmental effects of the project. The EIR should also evaluate the comparative merits of the project. Specifically, Section 15126.6 sets forth criteria for selecting and evaluating alternatives. A Draft EIR may support a determination of No Significant Impacts from implementation of the proposed Project with the implementation of mitigation measures set forth in this EIR.

The project objectives identify the purpose of the Project. The City has identified the following list of criteria as the objectives for the Project.

A. Maintain a range of potential housing units consistent with the City's General Plan.
B. Expand the amount of utility-scale renewable energy available to the City and region and reduce local and state dependence on fossil fuels which will support the State of California's renewable energy objectives.
C. Provide the City with a community benefits package which increases City revenue.
D. Assist the City in achieving its General Plan goals of reducing its carbon footprint and supporting sustainable sources of electricity.
E. Develop a project which limits the impact on the land by allowing renaturalization of the property once the project's operations have ended.

SUMMARY OF PROJECT IMPACTS AND MITIGATION MEASURES

Section 2, Environmental Setting, Impacts, and Mitigation Measures, of this DEIR presents the environmental impact analyses for all CEQA resource topics and identifies mitigation measures to reduce significant impacts to a less than significant level, where appropriate and feasible. A summary of all impacts and mitigation measures from Section 2 is provided in Table M-1 at the end of this summary. Please refer to Section 2 for the complete analysis and discussion.

As shown in Table M-1, impacts associated with visual resources will be significant and unavoidable as a result of the Project. Findings and a Statement of Overriding Considerations will be prepared and will be considered by the City as a part of its review of the EIR. The draft statement will set forth information, considerations, and findings that are supportive of the goals and benefits of the project as a whole.

ALTERNATIVES SUMMARY

Section 3, Project Alternatives Analysis, evaluates three alternatives to the proposed Project, and evaluates the comparative merits of each alternative. Potential environmental impacts associated with each alternative evaluated in Section 3 are compared to the impacts of the Project. The alternatives were developed to avoid or minimize impacts associated with implementation of the proposed Project, and in consideration of existing General Plan land use designations.

Alternative 1: No Project/No Construction
This Alternative assumes that the Project site (477 acres) would remain vacant desert land.

Alternative 2: No Project/Existing General Plan
Under Alternative 2, the site would develop as currently designated in the General Plan. The result of this Alternative would be the construction of 72 single family homes on the 360± acres of RL-5 designated land, and 47 single family homes on the 117± acres of RS-E land within the Project limits. Under this alternative, the Project area would build out as a standard large-lot subdivision, with improvements to public roadways on all sides, as well as a new internal street system. Although no configuration of lots has been developed, it would be expected that these 119 housing units would develop to City standards in the RL-5 and RS-E zones.

Alternative 3: Reduced Project Intensity
Alternative 3 would result in 80± acres of commercial solar development on the north half of the eastern parcel, between the City's north boundary and Samarkand Drive. Under this alternative, the solar component would reduce the City's residential capacity under SB 330, requiring a General Plan and Zoning map amendment on 20 acres of the southern half of the eastern parcel to Single Family Residential (RS-E), which would generate up to 20 single family homes. The western 317± acre parcel would be developed under the current residential designations, and would generate up to 52 single family homes on 259 acres of RL-5 land and 47 homes on 117 acres of RS-E land. Although no lot configuration is known, this alternative would be expected to pave adjacent roadways as part of the residential development, and the 119 residential units would be expected to develop to City standards in the RL-5, RS-E and RS-1 zones.

ISSUES OF CONCERN/AREAS OF CONTROVERSY

Based upon the written comments received during the NOP public review period and the scoping meeting, the City has identified the following areas of controversy:

- Aesthetics and Glare
- Air Quality/Dust Control
- Biological Resources
- Hydrology
- Land Use Compatibility

ENVIRONMENTAL SUMMARY MATRIX

This Environmental Impact Report (EIR) has been prepared to assess the potential impacts to the environment that may result from the approval and implementation of the proposed Project. The Project includes 477± acres of land. The Project consists of the development of a commercial solar facility on the northern 241± acres of the Project area (Solar Project), and a Residential General Plan Amendment (Residential GPA) on 60 acres in the south half of the Project site, to transfer the residential density from the Solar Project site which will be lost due to the conversion of the land to non-residential use.

Summary of Alternatives

The proposed Project includes three alternatives as follows:

Alternative 1: No Project/No Construction

This Alternative assumes that the Project site (477 acres) would remain vacant desert land.

Alternative 2: No Project/Existing General Plan

Under Alternative 2, the site would develop as currently designated in the General Plan. The result of this Alternative would be the construction of 72 single family homes on the 360± acres of RL-5 designated land, and 47 single family homes on the 117± acres of RS-E land within the Project limits. Under this alternative, the Project area would build out as a standard large-lot subdivision, with improvements to public roadways on all sides, as well as a new internal street system. Although no configuration of lots has been developed, it would be expected that these 119 housing units would develop to City standards in the RL-5 and RS-E zones.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in 80± acres of commercial solar development on the north half of the eastern parcel, between the City's north boundary and Samarkand Drive. Under this alternative, the solar component would reduce the City's residential capacity under SB 330, requiring a General Plan and Zoning map amendment on 20 acres of the southern half of the eastern parcel to Single Family Residential (RS-E), which would generate up to 20 single family homes. The western 317± acre parcel would be developed under the current residential designations, and would generate up to 52 single family homes on 259 acres of RL-5 land and 47 homes on 117 acres of RS-E land. This Alternative generates a total of 119 units at build out.

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
Section 2.3 Aesthetics			
a) Have a substantial adverse effect on a scenic vista.	Less Than Significant	No mitigation is required.	Less Than Significant
c) 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).	Significant	**AES-1** Within 60 days of the completion of construction, or at the earliest possible time that is appropriate to achieve plant establishment, as determined by the City and a qualified Project biologist, native plants shall be installed on the Solar Project site as further described in the Habitat Restoration Plan included as Appendix D.3. **AES-2** Prior to the completion of construction, plant native vegetation along the east and south sides of the perimeter security fence to shield the Solar Project site from potential future residential viewers. Irrigation would be required to assist initial plant growth.	Significant
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	Less Than Significant	No mitigation is required.	Less Than Significant
Section 2.4 Air Quality			
a) Conflict with or obstruct implementation of the applicable air quality plan.	Less Than Significant	No mitigation is required.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
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	No mitigation is required.	Less Than Significant
c) Expose sensitive receptors to substantial pollutant concentrations.	Less Than Significant	No mitigation is required.	Less Than Significant
Section 2.5 Biological Resources			
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.	Potentially Significant	**BIO-1** Construction-Related and Operational-Related Indirect Impacts to Biological Resources. For each phase of project implementation, including solar decommissioning activities, suitable habitat for special-status species (i.e., all undeveloped land or re-naturalized land within the project site) with potential to occur in the project, the project's Applicant/Developer shall include the following in the construction contractor's plans and specifications to address indirect construction-related impacts to special-status species: • Biological Monitoring. A qualified project biologist shall conduct monthly checks throughout the duration of project construction in order to inspect construction fencing, ensure that practicable measures are being	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		employed to avoid incidental disturbance of habitat, species of concern, and other sensitive biological resources outside the project footprint, and ensure that all applicable requirements from the mitigation measures are being upheld. • Worker Environmental Awareness Training. Prior to grading, a pre-construction meeting shall be required that includes a training session for project personnel by the biological monitor. The training shall include (1) a description of the species of concern and its habitats; (2) the general provisions of the applicable regulations pertaining to biological resources, including the Endangered Species Act and the Clean Water Act; (3) the need to adhere to the provisions of the Endangered Species Act, the Clean Water Act, and other applicable regulations; (4) the penalties associated with violating the provisions of the Endangered Species Act, Clean Water Act, and other applicable regulations; (5) the general measures that are being implemented to conserve the species of concern as they relate to the project; and (6) the access routes to and from disturbance area boundaries within which the project activities must be accomplished. Additionally, the training shall include the measures and mitigation requirements for the applicable resources. Copies of the mitigation measures and any required permits from the resource agencies shall be made available to construction personnel. The video may be recorded so that multiple	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		personnel are able to watch the material. The training shall be provided in alternate languages, as needed. In addition, operations and maintenance personnel shall be required to watch the recorded training prior to entering the Project during operations, with the only exception being emergency situations. Copies of the mitigation measures and any required permits from the resource agencies shall be made available to operations and maintenance personnel. • Delineation of Property Boundaries. Before beginning activities that would cause impacts, the contractor shall, in consultation with the biological monitor, clearly delineate the boundaries with fencing, stakes, or flags, consistent with the grading plan, within which the impacts will take place. All impacts outside the fenced, staked, or flagged areas shall be avoided, and all fencing, stakes, and flags shall be maintained until the completion of impacts in that area. In addition, any avoided environmental resources shall be clearly delineated. Prior to implementing construction activities, the biological monitor shall verify that the flagging clearly delineates the construction limits and any sensitive environmental resources to be avoided. • Standard Dust Control Measures. Standard dust control measures as per the Mojave Desert Air Quality Management District shall be implemented to reduce dust impacts on nearby conserved lands, plants, and wildlife. Measures include controlling speed to 15 mph or less on	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		unpaved roads, replacing ground cover in disturbed areas as quickly as possible, frequently watering active work sites, installation of shaker plates, and suspending excavation and grading operations during periods of high winds. • Stormwater Pollution Prevention Plan. Prior to issuance of a grading permit for construction, the applicant shall submit a stormwater pollution prevention plan (SWPPP) to the City of Twentynine Palms that specifies best management practices to prevent all construction pollutants from contacting stormwater, with the intent of keeping sedimentation or any other pollutants from moving off site and into receiving waters. The requirements of the SWPPP shall be incorporated into design specifications and construction contracts. • Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. Hazardous spills and contaminated soil shall be immediately cleaned up and the contaminated soil shall be properly handled or disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated staging area. Staging areas shall not be located within the project's avoidance areas. • Wildlife Hazards. The following measures shall be implemented to ensure that wildlife do not become	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		trapped, entangled, injured, or poisoned by construction activities: o Structures in which wildlife may become trapped (e.g., open pipes, pits, trenches, etc.) shall be tightly covered at the end of each work day. If covering the structure is not possible, an escape ramp shall be provided to allow any wildlife that falls in to safely escape. o Debris piles, construction materials, equipment, and other items that may be used as wildlife refuge shall be inspected for wildlife at the start of each work day and prior to disturbance. If wildlife is discovered, it shall either be moved out of harm's way by a qualified biologist or allowed to move off of the study area on its own under supervision by a qualified biologist. o Nets and mesh shall be made of loose-weave material that is not fused at the intersections of the weave, as nets with welded weaves present an entanglement risk. o Toxic materials and garbage shall be removed from the work site and safely stored or disposed of at the end of each work day. • Invasive Weeds. The project applicant shall be required to replant all temporarily impacted areas with native plants and remove invasive plants. The species proposed for replanting shall not include any plants found on the most recent version of the Cal-IPC California Invasive Plant Inventory(http://www.cal-ipc.org/ip/inventory/index.php).	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		• Noise. Proposed noise-generating land uses affecting suitable habitat for special-status species shall incorporate setbacks, berms, or walls to minimize the effects of noise on resources pursuant to applicable rules, regulations, and guidelines related to land use noise standards. For planning purposes, wildlife are not expected to be subjected to noise that would exceed rural residential noise standards. • Fencing. The solar array site shall include a 7-foot-high perimeter fence upon completion of construction and through the duration of operation to minimize the impact on sensitive or special-status biological resources occurring adjacent to the site. • Lighting. All construction activities shall be conducted during the daytime, and lights shall not be kept on overnight in the construction area. While night lighting is not currently proposed, if it is required for security purposes during construction activities or operational activities, all exterior lighting along undeveloped land shall be fully shielded and directed downward in a manner that will prevent light spillage or glare into the adjacent avoidance areas. As applicable, emergency maintenance work on the solar arrays at night would be performed using battery or gas-powered light stands that would be directed to the active work area.	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		BIO-2 Pre-Construction Nesting Bird Survey. If construction or solar decommissioning activities must occur during the migratory bird nesting season (typically January 1 through July 31), an avian nesting survey of the Project site and within 500 feet of all impact areas must be conducted to determine the presence/absence of fully protected species, protected migratory birds, and active nests. The avian nesting survey shall be performed by a qualified wildlife biologist within 72 hours prior to the start of construction in accordance with the Migratory Bird Treaty Act and California Fish and Game Code Section 3503, 3503.5, and 3513. If an active bird nest is found, the nest shall be flagged and mapped on the construction plans along with appropriate buffer established around the nest, which shall be determined by the biologist based on the species' sensitivity to disturbance (typically 300 feet for passerines and 500 feet for raptors and special status species). The nest area shall be avoided until the nest is vacated, and the juveniles have fledged. The nest area shall be demarcated in the field by flagging and stakes or construction fencing. On-site construction monitoring shall also be conducted when an active nest buffer is in place. No project activities may encroach into established buffers without the consent of a monitoring biologist. The buffer shall remain in place until it is	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		determined the nestlings have fledged and the nest is no longer considered active. **BIO-3** Pre-Construction Burrowing Owl Surveys and Avoidance One pre-construction Burrowing Owl survey shall be completed no more than 14 days before initiation of site preparation or grading or solar decommissioning activities and a second survey shall be completed within 24 hours of the start of site preparation or grading or decommissioning activities. If ground-disturbing activities are delayed or suspended for more than 30 days after the preconstruction surveys, the Project site shall be resurveyed. Surveys for Burrowing Owls shall be conducted in accordance with protocols established in the Staff Report on Burrowing Owl Mitigation in 2012 or current version. If Burrowing Owls are detected, and if impacts to Burrowing Owls cannot be feasibly avoided, the Project applicant will consult with CDFW and obtain appropriate take authorization from the CDFW through the CESA Incidental Take Permit (ITP) process. If requiring an ITP, mitigation for direct impacts to Burrowing Owl shall be fulfilled through compensatory mitigation at a minimum 1:1 habitat replacement of equal or better functions and values to those impacted by the Project, or as otherwise determined through the ITP process.	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		BIO-4 Pre-Construction Survey for Desert Kit Fox and Avoidance A pre-construction survey for Desert Kit Fox shall be conducted within 10 days before initiation of site preparation or grading activities to determine the presence/absence of Desert Kit Fox. If the Desert Kit Fox is detected, a Desert Kit Fox Relocation and Mitigation Plan shall be prepared by a qualified biologist in consultation with CDFW, and shall be implemented including protective measures such as the establishment of no disturbance buffer zones for active den and active natal den. A report to evaluate the success of the relocation efforts and any subsequent re-occupation, if applicable, shall be provided at the end of the construction period. Data shall be readily available to the CDFW upon request. If an injured, sick, or dead desert kit fox is detected on any area associated with the project, the designated CDFW personnel at both the Ontario office and the Wildlife Investigation Lab shall be notified as described within the Desert Kit Fox Relocation and Mitigation Plan. **BIO-5** Desert Tortoise Avoidance and Minimization Measures. Relocation and/or take of a desert tortoise may not occur without consultation with the USFWS and CDFW. The phrases "authorized biologist" and "desert tortoise monitor," as used herein, are taken from the most up to date USFWS guidance (USFWS 2009), and the definitions, roles, and responsibilities of	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		each will be adhered to during construction. Also, in accordance with guidance in USFWS (2019), if tortoises or fresh sign are observed during project construction, all activities that could result in take of desert tortoise shall cease immediately until an authorized biologist can confirm that no desert tortoise is present or the desert tortoise moves off the site on its own under the supervision of a qualified biologist. Desert tortoise exclusion fencing shall be installed around all construction areas prior to the initiation of vegetation clearing. Once the area is fenced, desert tortoises shall be removed from the area by the authorized biologist if the appropriate state and federal permits have been obtained or be allowed to move off site on their own by creating a gap in the fence under the supervision of a qualified biologist. Note that they cannot be "harassed" or otherwise directly encouraged to move off site without obtaining a federal take permit (or as directly authorized/directed by the USFWS and CDFW, if applicable). If the desert tortoise is allowed to move off site on its own, the gap in the exclusion fence will be closed once the tortoise has left the fenced area. After desert tortoise is no longer inside the fence, the fence shall be maintained in place until construction is completed. The purpose of the fence is to preclude all desert tortoises from the construction impact zone, including desert tortoises that may try to get back to their on-site burrow(s). A	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		minimum of two tortoise-free pre-construction clearance survey passes conducted by the authorized biologist or desert tortoise monitor, after exclusion fencing has been installed, are required to ensure that desert tortoises are no longer on the site and construction may commence. If the fence fails or is subject to gaps then two more tortoise-free survey passes must occur before work can resume. The fence shall be constructed of 0.5-inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches shall be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked at least weekly during construction by the authorized biologist or desert tortoise monitor, and maintained when necessary, by the project proponent to ensure its integrity. Access points will be protected by installing the latest specification entrance gates/grates/etc. In all cases, the protection system will not include gaps sufficient for even the smallest hatchling to pass through. Common raven perching deterrents shall be installed as part of the fence construction. If unsupervised gaps are detected, then pre-construction clearance surveys will be required after remediation and prior to resumption of work.	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		All project-related facilities and construction-related areas, such as staging areas and personnel parking areas, other than the access road and Two Mile Road discussed below, shall occur within the fenced area. All related infrastructure shall also remain within the fenced area. As part of the Worker Environmental Awareness Program (WEAP) training, all workers shall be informed to check beneath any parked vehicle immediately prior to moving the vehicle while in desert tortoise habitat outside fenced impact areas. After the desert tortoise-exclusion fence has been installed, all personal vehicles and construction equipment shall be parked inside the fenced area. Vehicular travel outside of established roads (including Samarkand Road, Sunrise Road, and private roads (once constructed) prior to removal of desert tortoises shall be prohibited. If a desert tortoise is found beneath a vehicle, the authorized biologist shall be contacted to move it from harm's way, if the appropriate state and federal permits have been obtained. Alternatively, the vehicle shall not be moved until the desert tortoise has left of its own accord under supervision of a qualified biologist. The authorized biologist shall be responsible for taking appropriate precautions to ensure that any desert tortoise moved in this manner is not exposed to temperature extremes that could be harmful to the animal.	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		The desert tortoise exclusion fence during construction shall have as part of its design either a desert-tortoise-proof cattle guard, desert tortoise exclusion gate, exclusion grate, or a breakaway portion of fence that can be opened and closed to allow vehicle access. The gate or modified fence shall remain closed at all times during construction except to allow vehicles to enter or leave the site. This measure may be modified if the desert tortoise monitor, based on surveys of surrounding areas, determines that there is little or no likelihood of desert tortoises entering the site through the opening. If the authorized biologist determines that the gate may be left open and subsequently finds that a desert tortoise has entered the construction area through that opening, a gate or modified fence shall be installed and kept closed after desert tortoise has left the site. Prior to installing the fence, the authorized biologist shall survey the area along which the fence will be installed, with the goal of establishing a fenced area that allows for as many desert tortoise burrows to remain outside the fenced area while still accommodating project construction. The authorized biologist shall consider the direction of the burrow and know that burrows may be 30 to 40 feet long. So, not only the burrow opening, but also the burrow's end, shall be considered and excluded if the fence line is to be altered. Any desert tortoise burrows found within the proposed fence line that cannot be avoided shall be hand excavated by the	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		authorized biologist prior to clearing of the fence line or installation of the fence. Burrow excavation procedures are discussed in Desert Tortoise Council (1999). The authorized biologist or desert tortoise monitors shall remain on-site to monitor the installation of the fence. After installing the fence, and before any other activities occur within the fenced area, the authorized biologist shall survey the site for desert tortoises. If possible, the surveys shall occur immediately after installation of the fence and several days prior to brushing or grading activities. The site shall be searched at least two consecutive times with a negative survey result, meaning if the site is searched and desert tortoise are found, two additional surveys must be completed until the result is negative. Burrows shall either be excavated as they are found or flagged for excavation later. Each burrow shall also be carefully checked for viable desert tortoise eggs. If found, the authorized biologist shall have a plan for disposition of these eggs outside the impact zone but within the adjacent area and move the eggs in such a way that the viability of the eggs is not adversely affected by their movement (Desert Tortoise Council 1999). Handling of desert tortoise eggs would require consultation with CDFW and the USFWS. Security fencing shall be placed inside of the desert tortoise exclusion fencing, which shall remain in place for the duration of project operations (e.g., excluding all	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		wildlife from entering the Project), as recommended by USFWS and CDFW (Lalumiere, pers. comm. 2025). Prior to conducting vegetation clearing or grading activities in desert tortoise habitat outside permanently fenced areas of the project site (i.e., off-site access road, gen-tie alignment, and substation), the authorized biologist or desert tortoise monitor under the supervision of an authorized biologist will survey the access road impact area immediately prior to conducting these activities to ensure that no desert tortoises are present. Because of the linear nature of the access road, the applicant may conduct surveys at any time of year but shall avoid impacts to potential and known desert tortoise burrows, in addition to avoiding impacts to desert tortoises. Potential burrows will be buffered by 30 feet unless they can be shown to be unoccupied, or the authorized biologist believes a smaller buffer is appropriate in order to protect underground burrows. Examples of situations where smaller buffers may be appropriate may include the following: burrow entrances are obviously oriented away from the impact area; the type of activity near the burrow is not likely to impact desert tortoise (e.g., the activity will not have the potential to crush a burrow); the burrow is adjacent to an existing thoroughfare that receives vehicle use already and the proposed activity is similar in nature; etc. Temporary desert tortoise exclusion fencing will be installed along the access road. Once	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		construction along the access road is completed, the desert tortoise exclusion fencing shall be removed. No vehicle or equipment parked outside any of the fenced areas will be moved prior to inspecting the ground beneath the vehicle or equipment for the presence of desert tortoise. If present, the desert tortoise will be left to move on its own under supervision by a qualified biologist. The WEAP required under Mitigation Measure BIO-1 shall also include the following information and requirements specific to protection of desert tortoise: - A description of the desert tortoise, including adults and juveniles - Color photographs of desert tortoise - Protections to the desert tortoise under the ESA and CESA and potential penalties for violating the ESA and CESA - Measures implemented under the project to protect desert tortoises and to conserve their habitat - The requirement that all workers shall check beneath any parked vehicle immediately prior to moving the vehicle while in desert tortoise habitat outside fenced impact areas and what to do if a desert tortoise is found - Information for contacting the authorized biologist or desert tortoise monitor in case personnel observe one or more desert tortoises on the project site	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		- All trash that may attract desert tortoise predators (e.g., ravens, domestic dogs) shall be removed from the work site at the end of each day. - If desert tortoises occur in a work area and will not leave of their own accord, then it will be necessary to coordinate with the USFWS and CDFW. Physical relocation of a desert tortoise may not occur unless approved by the wildlife agencies, and this may require authorizations pursuant to Incidental Take Permits from the USFWS and CDFW. - The biological monitors shall have the authority to stop work at all times, if proper avoidance measures are not in place or project activities may potentially result in impacts to desert tortoises. - A speed limit of 15 mph shall be maintained at all times except on county/state roads. - Work shall be restricted to daylight hours at all times when working within or adjacent to desert tortoise habitat, except in an emergency, to avoid vehicle traffic when tortoise may be on access roads at times of poor visibility. This mitigation measure would also be applied in the event of future construction of roads subject to the future road dedications. **BIO-6** <u>Desert Tortoise Habitat Compensatory Mitigation.</u> The project applicant shall implement habitat mitigation for 142.1± acres of permanent impacts to occupied desert	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		tortoise habitat. Impacts are to be compensated at a minimum 1:1 ratio either through one or a combination of the following: Option 1: Purchase of off-site habitat mitigation lands that contain suitable habitat for desert tortoise. Option 2: Purchase of mitigation credits at a mitigation bank for desert tortoise. The applicant shall submit a document outlining the permanent impacts to desert tortoise habitat, along with a compensatory mitigation plan, to the USFWS and CDFW for review and approval. The Project applicant shall also be required to obtain an Incidental Take Permit (ITP) from the CDFW and USFWS where the ITP includes an analysis of whether Project impacts would jeopardize the continued existence of the species, provide suitable avoidance and minimization measures to reduce potential impacts, and adequately mitigate through conservation or mitigation banking. Unavoidable impacts to occupied suitable habitat shall be compensated at a minimum of 1:1, as described above, in addition to implementing all other measures and condition of the ITPs. This mitigation measure would also be applied in the event of future construction of roads subject to the future road dedications.	

		BIO-7 <u>Focused Surveys, Avoidance and Mitigation Outside of Solar BSA</u> Development proposed for any portion of the site outside the Solar Project BSA shall be required to conduct the following surveys prior to issuance of grading permits: a general biological reconnaissance survey, including vegetation mapping, special-status plant survey, western Joshua Tree focused survey, desert native plant survey, desert tortoise (Gopherus agassizii) protocol-level survey, burrowing owl (Athene cunicularia) protocol-level survey, and an aquatic resources delineation. Focused surveys shall be conducted in accordance with the methods described in Section 3.2.4, Special-Status and Regulated Resources, of the project-specific Biological Resources Technical Report. If the results of the general biological reconnaissance survey determine there are biological resources that are not evaluated in the Biological Resources Technical Report, then additional CEQA documentation would be required by the project applicant. If the general biological reconnaissance survey determines there are sensitive natural vegetation communities, and if jurisdictional aquatic resources, and/or desert native plants, desert tortoise, or burrowing owl are determined present, then the following applicable mitigation measures from Section 7 of the Project BRTR referenced below shall be implemented: Mitigation Measure BIO-2 (Construction-Related and Operational-Related Indirect Impacts to Biological Resources), Mitigation Measure BIO-3 (Desert Tortoise Avoidance and Minimization Measures), Mitigation Measure BIO-4 (Desert Tortoise Habitat Compensatory Mitigation), Mitigation Measure BIO-5 (Pre-Construction Burrowing Owl Surveys and Avoidance), Mitigation Measure BIO-6 (Pre-Construction Survey for Desert Kit Fox and Avoidance), Mitigation Measure BIO-7 (Pre-Construction Nesting Bird Survey), Mitigation Measure BIO-8	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		(Sensitive Vegetation Communities and Jurisdictional Resources Mitigation), Mitigation Measure BIO-9 (Avoidance and Minimization to Potential Jurisdictional Aquatic Resources), and Mitigation Measure BIO-10 (Desert Native Plants Removal Permit). Should special-status plant species and/or western Joshua Tree be determined present, then the following additional mitigation measures shall be implemented: <u>Special-Status Plants</u> Impacts to special-status plant occurrences shall be avoided to the greatest extent possible and minimized where avoidance is not feasible. Where impacts to special-status plant species cannot be avoided, mitigation is required. For direct impacts to special-status plant species, one or a combination of the following strategies shall be implemented: - *Avoidance and Minimization*. Impacts to special-status plant occurrences shall be avoided to the greatest extent possible and minimized where avoidance is not feasible. - *Salvage*. If a qualified ecologist determines that impacts to special-status plants cannot be avoided and it is feasible to effectively salvage the plants, that ecologist shall develop a restoration and mitigation plan based on the life history of the species impacted, as necessary, to	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		mitigate project impacts. The plan shall include, at minimum, (a) collection/salvage measures for plants and/or seed banks to retain intact soil conditions and maximize success likelihood; (b) details regarding storage of plants and/or seed banks; (c) location of the proposed recipient site and detailed site preparation and plant introduction techniques details for top soil storage, as applicable; (d) time of year that the salvage and replanting or seeding shall occur and the methodology of the replanting; (e) a description of the irrigation, if used; (f) success criteria; and (g) a detailed monitoring program, commensurate with the plan's goals. <u>Western Joshua Tree</u> If impacts to western Joshua tree cannot be avoided, mitigation is required. If avoidance is not feasible, and construction will result in direct removal of western Joshua tree, a Westen Joshua Tree Conservation Act Incidental Take Permit or a Section 2081 Incidental Take Permit from CDFW shall be required prior to construction.	

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 US Fish and Wildlife Service.	Potentially Significant	**BIO-8** <u>Avoidance and Minimization of Impacts to Potential Jurisdictional Aquatic Resources.</u> The following avoidance and minimization measures would be implemented when ground-disturbing activities occur within 25 feet of waters of the state and/or jurisdictional streambeds (i.e., jurisdictional aquatic resources): • All jurisdictional aquatic resources within 25 feet of project activities shall be fenced or flagged as environmentally sensitive areas prior to any ground disturbance. • A biological monitor shall be present during construction activities within 25 feet of jurisdictional aquatic resources to ensure avoidance. • Best Management Practices shall be implemented to avoid indirect impacts to jurisdictional waters, including: - Water containing mud, silt, or other pollutants from grading or other activities shall not be allowed to enter jurisdictional aquatic resources or be placed in locations that may be subjected to high storm flows. - Spoil sites shall not be located within jurisdictional aquatic resources or in locations that may be subject to high storm flows, where spoils might be washed into drainages. - Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous, resulting from project-related activities, shall be prevented from entering jurisdictional aquatic resources. - Equipment maintenance shall occur outside jurisdictional aquatic resources and in such a manner that no petroleum products or other pollutants from the equipment enters on- or off-site state-jurisdictional aquatic resources either directly or indirectly.	Less Than Significant

		BIO-9 <u>Sensitive Vegetation Communities and Jurisdictional Resources Mitigation Outside of Solar BSA</u> If the Residential GPA site and future road dedications are constructed, prior to issuance of a grading permit, permanent impacts to the sensitive vegetation community (e.g., desert willow–smoketree wash woodland), will be mitigated at not less than a 1:1 ratio through preservation of the same vegetation community either on site, off site, or through a CDFW approved mitigation bank. Areas outside the solar BSA shall also mitigate to ensure no-net-loss of jurisdictional aquatic resources at a minimum of 1:1 with purchase of credits at an approved mitigation bank including Regional Water Quality Control Board/California Department of Fish and Wildlife jurisdiction. Mitigation shall be completed through use of a mitigation bank (e.g., Black Mountain Conservation Bank) or other applicant-sponsored mitigation either on site or off site. Final mitigation ratios and credits shall be determined in consultation with the resource agencies but will be no less than a 1:1 mitigation ratio. Should applicant-sponsored mitigation be implemented, a Habitat Mitigation and Monitoring Plan (HMMP) shall be prepared. The HMMP shall include a conceptual planting plan including planting zones, grading, and irrigation, as applicable; a conceptual planting plant palette; a long-term maintenance and monitoring plan; annual reporting requirements; and proposed success criteria. Any applicant-sponsored mitigation shall be conserved and managed in perpetuity. Best management practices shall be implemented to avoid any indirect impacts on jurisdictional waters and sensitive vegetation communities as described in Mitigation Measure BIO-8 (Avoidance and Minimization of Impacts to Potential Jurisdictional Aquatic Resources).	

		BIO-10 Desert Native Plants Removal Permit Prior to issuance of grading permits or solar decommissioning activities, the Project applicant shall submit an application and applicable fee paid to City of Twentynine Palms for removal of protected native desert plants under the California Desert Native Plants Act. The applicant shall submit a detailed plan consistent with the requirements of the Act. The City shall hire, at the applicant's expense, a qualified biologist to review the plan and provide conditions of approval for the grading permit. The Project shall comply with any conditions of approval imposed by the City upon issuance of the permit. The permit application shall specify information outlined in the California Desert Native Plant Act Section 80114, which includes but is not limited to, the number and species of native plants to be removed, a description of the real property from which the plants are to be removed, and in the case that relocation is required, the destination of the native plants and the manner in which the plants are to be salvaged. Pursuant to the California Desert Native Plants Act, tags or seals issued by the City of Twentynine Palms must be attached to the native plants at the time of harvesting and before transporting to their permanent relocation site(s) and must remain attached to the plant until transplanted into its ultimate destination. Transport of salvaged plants will occur as prescribed by the City of Twentynine Palms. If relocation is required by the applicable review authority, the following actions shall also be implemented to ensure successful relocation of desert native plants: • Salvaged plants shall be transplanted expeditiously to either their final on-site location, or to an approved off-site	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		area. If the plants cannot be expeditiously taken to their permanent relocation area at the time of excavation, they may be transplanted in a temporary area (stockpiled) prior to being moved to their permanent relocation site(s). • Plants designated for relocation shall be marked on their north facing side prior to excavation. Transplanted plants shall be planted in the same orientation as they currently occur on the project site, with the marking on the north side of the trees facing north at the relocation site(s). • Transplanted plants shall be watered prior to and at the time of transplantation. The schedule of watering shall be determined by the qualified desert native plant expert(s) to maintain plant health. Watering of the transplanted plants shall continue under the guidance of qualified desert native plant expert(s) until it has been determined that the transplants have become established in the permanent relocation site(s) and no longer require supplemental watering.	
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,	Potentially Significant	See BIO-1, BIO-3, BIO-5 and BIO-7 above.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
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.	Potentially Significant	See BIO-9 and BIO-10 above.	Less Than Significant
Section 2.6 Cultural Resources			
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5.	Potentially Significant	**CUL-1** Cultural Resource Survey – Residential GPA Site In order to assure that impacts to cultural resources are reduced to less than significant levels, a cultural resource survey, including an analysis of both historic and archaeological resources, shall be conducted prior to the approval of a tentative subdivision map or any other entitlement to allow development on the Residential GPA site. The survey shall include records searches, literature review and field investigations, and shall include mitigation measures as necessary to protect any resources identified on the site.	Less Than Significant
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5.	Potentially Significant	**CUL-2** Archaeological and/or Tribal Resource Discovery and Documentation A Cultural Resources Monitoring and Discovery Plan (Plan) shall be prepared and finalized prior to the initiation of Solar Project construction. The Plan will require that qualified archaeological monitor(s) be present and that tribal monitor(s) representing the Cahuilla Band, the Agua	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		Caliente Band and the Yuhaaviatam be present during all ground-disturbing activities within the Project site, unless Tribe(s) provide the City with written withdrawal from their monitoring request. The applicant/developer shall allow 45 days from initial contact with the above-listed Tribes to enter into a contract with the Tribes for monitoring services. If the applicant/developer can demonstrate to the City they were unable to secure an agreement from the above-referenced Tribe, or if the contracted Tribe fails to fulfill its obligation under the contract terms, then the applicant/developer may retain an alternative qualified tribal monitor approved by the City. Monitoring requirements and locations will be defined in the Plan, along with resource discovery protocols and guidance for reducing or terminating site monitoring in the case that no artifacts are identified. Should an artifact be discovered, all construction activity within 100 feet of the discovery shall stop until a qualified archaeologist can evaluate the significance of the artifact and make a determination whether further study is necessary, and whether or when work may resume. Should the artifact be found to be significant under CEQA, an archaeological treatment plan and further data recovery may be required, as determined by the Project archaeologist and the Tribes.	

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
c) Disturb any human remains, including those interred outside of formal cemeteries	Less Than Significant	No mitigation is required.	Less Than Significant
Section 2.7 Energy Resources			
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	No mitigation is required.	Less Than Significant
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	No Impact	No mitigation is required.	No Impact
Section 2.8 Geology and Soils			
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: ii) Strong seismic ground shaking?	Less Than Significant	No mitigation is required.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
iv) Landslides?	Less Than Significant	No mitigation is required.	Less Than Significant
b) Result in substantial soil erosion or the loss of topsoil.	Less Than Significant	No mitigation is required.	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	No mitigation is required.	Less Than Significant
Section 2.9 Greenhouse Gas Emissions			
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Less Than Significant	No mitigation is required.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Less Than Significant	No mitigation is required.	Less Than Significant
Section 2.10 Hazard & Hazardous Materials			
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Potentially Significant	**HAZ-1** Prior to construction, a Hazardous Material Management Plan shall be prepared by the Applicant and submitted to the City for review and approval, to specify the method for handling and disposing of hazardous material related to the construction process.	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.	Potentially Significant	**HAZ-2** A toxicity characteristic leaching procedural (TCLP) test must be performed to determine the toxicity level of solar panel(s) prior to its being recycled or disposed. If the solar panel waste does not exceed the threshold to be defined as hazardous waste, no further action is required. If the solar panel's toxicity level exceeds the threshold and is defined as hazardous waste, all federal, state, and local regulations regarding the disposal of hazardous waste will be applied to the solar panel's disposal, including the use of a qualified hauler, and disposal in a designated landfill.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
Section 2.11 Hydrology and Water Quality			
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.	Potentially Significant	**HYD-1** Spill Prevention, Control, and Countermeasure Plan (SPCCP) The Applicant shall prepare a Spill Prevention, Control, and Countermeasure Plan (SPCCP) that shall clearly state measures to stop the source of a spill, contain the spill, clean up the spill, dispose of contaminated materials, and train personnel to prevent and control future spills. The SPCCP shall identify sources of oil or hazardous wastes that may be stored or used on site. If oil or hazardous wastes would be stored on site during operations, the SPCCP shall identify the location of storage, anticipated volumes of materials to be stored, method of storage, and countermeasures to address potential spill or accidental release of materials. In addition, the SPCCP shall include step-by-step instructions for the response to spills at a facility. In addition, the spill response plan should: • Identify individuals responsible for implementing the plan • Define safety measures to be taken with each kind of waste • Specify how to notify appropriate authorities, such as police and fire departments, hospitals, or municipal sewage treatment facilities for assistance • State procedures for containing, diverting, isolating, and cleaning up the spill	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
		• Describe spill response equipment to be used, including safety and cleanup equipment The SPCCP shall be submitted to San Bernardino County Public Works – Environmental Management Division for review and approval prior to occupation/operations and shall be maintained over the operational life of the Project.	
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	No mitigation is required.	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:	Less Than Significant	No mitigation is required.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
i) result in 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 off-site; 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.			
Section 2.12 Land Use/Planning			
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.	Less Than Significant	No mitigation is required.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
Section 2.13 Noise			
a) Generate 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	No mitigation is required.	Less Than Significant
b) Result in the generation of excessive groundborne vibration or groundborne noise levels.	Less Than Significant	No mitigation is required.	Less Than Significant
Section 2.14 Population, Housing, and Socio-Economic Resources			
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).	Less Than Significant	No mitigation is required.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
Section 2.15 Public Services			
a) The project would 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: • Fire protection	Less Than Significant	No mitigation is required.	Less Than Significant
• Police protection	Less Than Significant	No mitigation is required.	Less Than Significant
• Schools	Less Than Significant	No mitigation is required.	Less Than Significant
• Parks	Less Than Significant	No mitigation is required.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
• Other public facilities	Less Than Significant	No mitigation is required.	Less Than Significant
Section 2.16 Recreational Resources			
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.	Less Than Significant	No mitigation is required.	Less Than Significant
b) include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.	Less Than Significant	No mitigation is required.	Less Than Significant
Section 2.17 Transportation and Traffic			
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.	Less Than Significant	No mitigation is required.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).	Less Than Significant	No mitigation is required.	Less Than Significant
d) Result in inadequate emergency access.	Less Than Significant	No mitigation is required.	Less Than Significant
Section 2.18 Tribal Cultural Resources			
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).	Potentially Significant	See CUL-1 and CUL-2 above.	Less Than Significant
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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1h, the lead agency	Potentially Significant	See CUL-1 and CUL-2 above.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
shall consider the significance of the resource to a California Native American tribe.			
Section 2.19 Utilities and Service Systems			
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	No mitigation is required.	Less Than Significant
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.	Less Than Significant	No mitigation is required.	Less Than Significant

TABLE M-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	**Level of Impact Before Mitigation**	**Proposed Mitigation Measure(s)**	**Level of Significance after Mitigation**
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 Than Significant	No mitigation is required.	Less Than Significant
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	Less Than Significant	No mitigation is required.	Less Than Significant

CITY OF TWENTYNINE PALMS SOLAR PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT

1. INTRODUCTION AND PROJECT DESCRIPTION

1.1 Project Overview

The Project encompasses 477± acres and is comprised of two components:

The Solar Project consists of 241± acres of the 477± acre site, and would include 184± of land graded and improved with a 50 megawatt (MW) commercial solar generation facility. The Solar Project will include 160,000 photovoltaic solar panels mounted on 720 ground-mounted, fixed tilt solar panel racks each 104 feet wide and 252 feet long, separated by 10 foot wide service/maintenance drives. Solar Project improvements will also include inverters and transformers, electrical cabling and communication lines, on-site switchgear, generation tie-line, a driveway extending from the south boundary of the Solar Project to Two Mile Road, and a 7 foot high security fence. Off-site improvements will include underground cabling extending and connecting the Solar Project's power supply to the Southern California (SCE) transmission network at the Carodean Substation, located approximately one-half mile west from the Project site on the south side of Two Mile Road and certain improvements to existing SCE infrastructure.

The Residential GPA portion of the Project consists of changes to the General Plan necessary to offset the Solar Project's impacts associated with Senate Bill (SB) 330. Because the Solar Project will remove 241 acres of residential land from the City's total residential supply, the applicant for the Solar Project is required to offset the

loss and assure that the City does not reduce its potential housing supply. A General Plan Amendment and Rezone are proposed to change the land use and zoning designations on the 119 acres of RL-5 designated land of parcels 0612-201-01 and 0612-201-05 south of the Solar Project. The GPA and Rezone will re-designate 60 acres (half of the RL-5 designated land) as Single Family Residential, 1 unit per acre (RS-1), while the remaining 59 acres remain RL-5 (see Exhibit 5). Because the Solar Project will eliminate the potential for 48 residential units (the maximum density allowed in the RL-5 designation), the GPA and Rezone increase the density of the southerly 236 acres from the currently allowable 71 units to a maximum of 119 units. This change will therefore accommodate the 48 units which would be lost if the Solar Project is approved. There is no residential development proposed on this acreage as part of the Project. Residential units could be built in the future, when entitlement applications are filed, if the GPA and REZ are approved. Because no projects are proposed, the analysis conducted in this EIR for this component is a "first tier" analysis. Further review of project-specific impacts will be required when specific residential project(s) are proposed, as indicated throughout this document.

1.2 Project Location and Limits

The Project site is located at the northwest corner of Two Mile Road and Noels Knoll Road (extended), in the northwestern portion of the City (see Exhibits 1-1 And 1-2, Regional Location Map and Vicinity Map). The site consists of 477 acres of currently undeveloped property identified as Assessor's Parcel Nos. 0612-201-01 (317± acres) and 0612-201-05 (160± acres). The site is bordered by Two Mile Road on the south and unimproved future City streets, including Amboy Road on the north, Canyon Road on the west, and Noels Knoll Road on the east.

The Project will require both on-site and off-site improvements to connect to the electric grid. On-site improvements require the installation of a driveway and underground power lines, extending one-half mile south from the Solar Project to connect to the intersection of Two Mile Road north of Easy Street. Off-site improvements will extend the underground power lines westerly along Two Mile Road one-half mile to the existing Southern California Edison (SCE) Carodean substation and certain improvements to SCE infrastructure described below.

1.3 Surrounding Uses and Existing Designations

The Project is located in the northwestern corner of the City. Lands to the north and west are generally vacant. Land to the southwest of the Project site, west of Easy Street, is also vacant. Land to the southeast, east of Easy Street, consists of scattered single family homes on large lots. Lands immediately east of the Project site are vacant, with a church located at the northwest corner of Two Mile Road

and Sunrise Road, and scattered single family homes located generally north of Samarkand Drive and east of Sunrise Road. The closest structures to the Project site are homes located 150 to 200 feet south of Two Mile Road. The closest structures to the Solar Project site are homes located approximately 1,500 feet southeast of the site, across Sunrise Road. The SCE Carodean substation is approximately one half mile west of the Project site, located south of Two Mile Road.

The northern three-quarters of the Project site is currently designated Rural Living, 5 acre minimum (RL-5). The southerly one-quarter of the Project site is currently designated Single-Family Residential, Estate (RSE).

The General Plan designates lands to the west of the Project site as Rural Living, 5 acre minimum (RL-5). Lands to the north, in the City's Sphere of Influence, are also designated RL-5. Lands east of the Project site are designated RL-5 and RSE, allowing one unit per 2.5 acres. Lands to the south are also designated RSE.

1.4 Project Description

The Project as a whole encompasses 477± acres, and proposes the Solar Project on the northerly 241± acres, and a GPA and Rezone to allow residential development of up to 119 units (Residential GPA) on the southerly 236± acres. Each of the two Project components is described below, followed by a description of the applications necessary to implement that component.

Solar Project

The Solar Project proposes the development of a commercial solar array on 184 acres of the northern 241 acres. The westerly 57 acres of parcel 0612-201-01 will remain in its natural condition. The solar project will have the ability to generate 50 megawatts (MW) of solar power. In addition to on-site improvements, the Solar Project will require off-site improvements. A detailed description of the Solar Project is provided below.

Solar Project On-Site Improvements

The Solar Project will result in the installation of 160,000± solar panels on 184 acres of the northern 241 acres of the site. The panels will be tempered glass, with an anti-reflective coating to reduce the potential for glare. The Solar Project will include rows of 720± ground-mounted solar panel racks each 104± feet wide and 252± feet long, separated by 10 foot wide service/maintenance drives (see Exhibit 1-6, Solar Project Site Plan). The panels will be mounted on pilons, at a fixed 21 degree angle, facing south. Each row of panels will be a minimum of 3 feet off the ground, and will be 6 to 7 feet tall (see Exhibit 1-8, Representative Solar Panel Racks). The pilons supporting each row will extend about 7 feet below ground.

The panel racks will be interconnected with underground cabling, which will be installed in trenches and back-filled. The depth of these trenches is expected to be about 4 feet below grade.

A total of 170± inverters will be connected to the panels by cables, and consolidated on the panel racks. The inverters will be connected to an on-site pad-mounted transformer at the south-central boundary of the Solar Project. This transformer will convert the power to be compatible with the voltage in the SCE system. All components of the Solar Project will be constructed to meet the City's Building Codes and Fire Code, as well California Independent System Operator (CAISO) and utility standards.

The Solar Project will be crossed by 20 foot wide compacted gravel service roads which parallel the solar racks throughout the site. The site plan has been designed to avoid multiple dry washes located on the property. At one location in the central portion of the Solar Project site, a pre-fabricated 20 foot wide and 80 foot long concrete-supported steel bridge will be installed above the wash (see Exhibit 1-9, Prefabricated Bridge Design).

The perimeter of the solar panel installation will be fenced with a 7-foot high chain link fence, with one locked 40-foot access gate at Samarkand Drive (extended), connecting to the driveway which will extend southerly to Two Mile Road. Closed circuit television (CCTV) cameras will be mounted on the fence, and will be monitored by a security company.

To connect to the power grid, the Solar Project requires the installation of a 26 foot wide compacted gravel driveway and underground power lines, extending one-half mile south from the Solar Project site to the intersection of Two Mile Road at Easy Street at the southern boundary of the Project site. This driveway will include a 26 foot wide and 40 foot long pre-fabricated bridge in the south half of the driveway, to cross an existing wash. (See "Solar Project Off-Site Improvements," below, for continued discussion of power grid connection).

The site will be graded to accommodate the rows of panels. The grading plan submitted with the Solar Project applications shows 140 acres of disturbance, and estimates about 264,000 cubic yards of fill, and 264,000 cubic yards of cut, with no import or export required. Construction is expected to require approximately 9 months. Construction equipment, vehicles and materials deliveries would be expected to use Two Mile Road and the Solar Project driveway to access the site. The Solar Project will be required to comply with City standards and requirements related to construction on the site, including the implementation of dust management plans, stormwater protection and prevention, and construction

hours. Please see Section 2 discussions for specific analysis of construction impacts, including Air Quality and Hydrology.

As part of the Development Agreement for the Solar Project, the applicant would dedicate land for future roadways, as follows: 60 feet for the future development of Samarkand Drive; a 30 foot half-width dedication of the west half of Noel's Knoll Road, and a 30 foot half-width dedication for Amboy Road. A 2-foot wide dedication along the Project frontage of Two Mile Road will also be provided. Improvement of these roadways is not proposed as part of the Project.

Solar Project Off-Site Improvements

From the Project site, power generated by the Solar Project will be routed under the driveway via an underground generation tie-line one half mile south to Two Mile Road, and one half mile west along the north side of Two Mile Road to the existing Southern California Edison Carodean substation located on the south side of Two Mile Road, east of Canyon Road.

Improvements will be required at the substation, including a structure for SCE's equipment and remote terminal units, a new 115 kilovolt (kV) switchrack, relays, and 115kV transmission towers. In addition to the substation improvements, SCE will require that a 220 kV circuit breaker located at the Devers substation be replaced with a 63 kilo amp (kA) circuit breaker. The Devers substation is located approximately 30 miles southwest of the Project site, north of the City of Palm Springs. This replacement will occur entirely within the existing substation improvements, and no interconnection beyond what SCE currently has in place will be required.

Solar Project Operation

The Solar Project will be unmanned. Operation of the panels will be monitored remotely. Solar Project personnel will visit the site for maintenance and system monitoring, on an as-needed basis. An inspection will be conducted annually. Maintenance activities, when necessary, will occur at night, when the panels are not collecting power. Any parts required will be stored remotely, and brought to the site as needed to service or replace the equipment.

The site will not be lighted. A self-powered, water-free cleaning robot will be used for regular cleaning of the solar panels to remove dust. Cleaning with a power-washer would occur only after a significant dust storm or similar event. On those occasions, water would be trucked in and the power washing system connected to the water truck.

Solar Project Decommissioning

The Solar Project is expected to have an operational life span of 35 years. The applicant will be responsible for decommission and removal of the solar system and its components at the end of the life of the Solar Project and restoration of the Project site to its pre-Project condition. All decommissioning and restoration activities will be required to adhere to the requirements of all applicable Federal, State and City regulations.

Residential General Plan Amendment

The second component of the Project is the Residential General Plan Amendment component. A General Plan Amendment and Rezone are proposed to change the land use and zoning designations on part of the RL-5 designated portions of parcels 0612-201-01 and 0612-201-05. Specifically, the GPA and Rezone will re-designate 60 acres (half of the RL-5 designated land) to Single Family Residential, 1 unit per acre (RS-1), while the remaining 59 acres remain RL-5. Because the Solar Project will eliminate the potential for 48 residential units (the maximum density allowed in the RL-5 designation), the GPA and Rezone increase the density of the southerly 236 acres from the currently allowable 71 units to a maximum of 119 units. This change will therefore accommodate the 48 units which would be lost if the Solar Project is approved. There is no residential development proposed on this acreage as part of the Project. Residential units could be built in the future, when entitlement applications are filed, if the GPA and REZ are approved. Such development would require additional discretionary City approvals, including a subdivision map, and the City would be required to comply with CEQA before approving any such development.

1.5 Project Applications

In order to be permitted, the Project requires a number of actions by the City:

- In order to allow the construction of the Solar Project, a new General Plan "Energy (E)" designation is required. The General Plan Amendment text consists of descriptive language defining the new land use designation, and amendment of tables and exhibits consistent with the addition of this land use designation to the General Plan (please see Appendix J).
- A proposed Development Code text amendment is required to add an "Energy (E)" zone, consisting of the addition of permitted uses, including solar facility, as well as related development standards and similar text, (please also see Appendix J, General Plan Amendment and Development Code Text).
- General Plan and Zoning Map amendments are proposed to (a) add the E designation to the map for northerly 241 acres to allow the Solar Project; and (b) change the land use and zoning designations on the 119 acres of RL-5 designated land of parcels 0612-201-01 and 0612-201-05 south of the Solar

Project to designate 60 acres (half of the RL-5 designated land) to Single Family Residential, 1 unit per acre (RS-1), while the remaining 59 acres remain RL-5. There is no residential development proposed on this acreage as part of the Project. Residential units could be built in the future, when entitlement applications are filed, if the GPA and REZ are approved. Such development would require additional discretionary City approvals, including a subdivision map, and the City would be required to comply with CEQA before approving any such development.

- A Conditional Use Permit is required to allow the development of the Solar Project, including site design and improvements.
- A statutory Development Agreement is proposed for the Solar Project and is intended to address the applicant's proposed community benefit program, and the dedication of street rights-of-way without improvements on Amboy Road, Noels Knoll Road and Samarkand Drive.

1.6 Purpose and Need

The City has determined that the Project will have an impact on the environment, and that those impacts could be significant, as described in the Initial Study/Notice of Preparation (please see Appendix A). As required by CEQA Guidelines 15060 and 15064, the City has considered the potential impacts of the Project, and determined that an EIR must be prepared to analyze these potentially significant impacts, and develop mitigation measures to reduce the impacts to less than significant levels, if feasible. Section 2 of this EIR contains the analysis of Project impacts and mitigation measures.

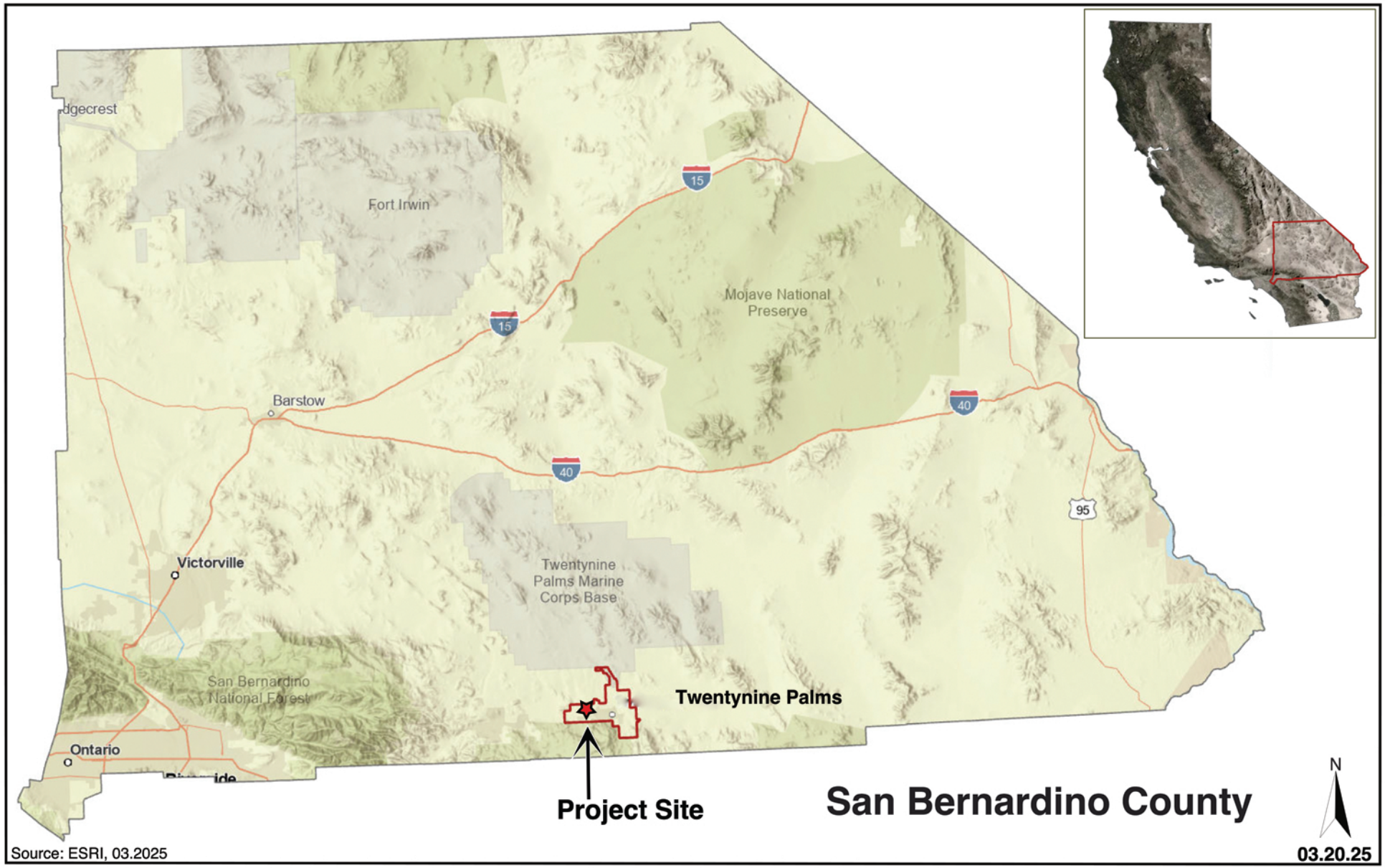
1.7 Statement of Project Objectives

CEQA Guidelines Section 15126.6 states that an EIR must describe and evaluate a reasonable range of alternatives to a project that would feasibly attain most of the Project's basic objectives, but that would avoid or substantially lessen any identified significant adverse environmental effects of the project. The EIR should also evaluate the comparative merits of the Project. The following Project Objectives apply to this Project:

A. Maintain a range of potential housing units consistent with the City's General Plan.
B. Expand the amount of utility-scale renewable energy available to the City and region and reduce local and state dependence on fossil fuels, which will support the State of California's renewable energy objectives.
C. Provide the City with a community benefits package that increases City revenue.

D. Assist the City in achieving its General Plan goals of reducing its carbon footprint and supporting sustainable sources of electricity.
E. Develop a project which limits the impact on the land by allowing renaturalization of the property once the project's operations have ended.

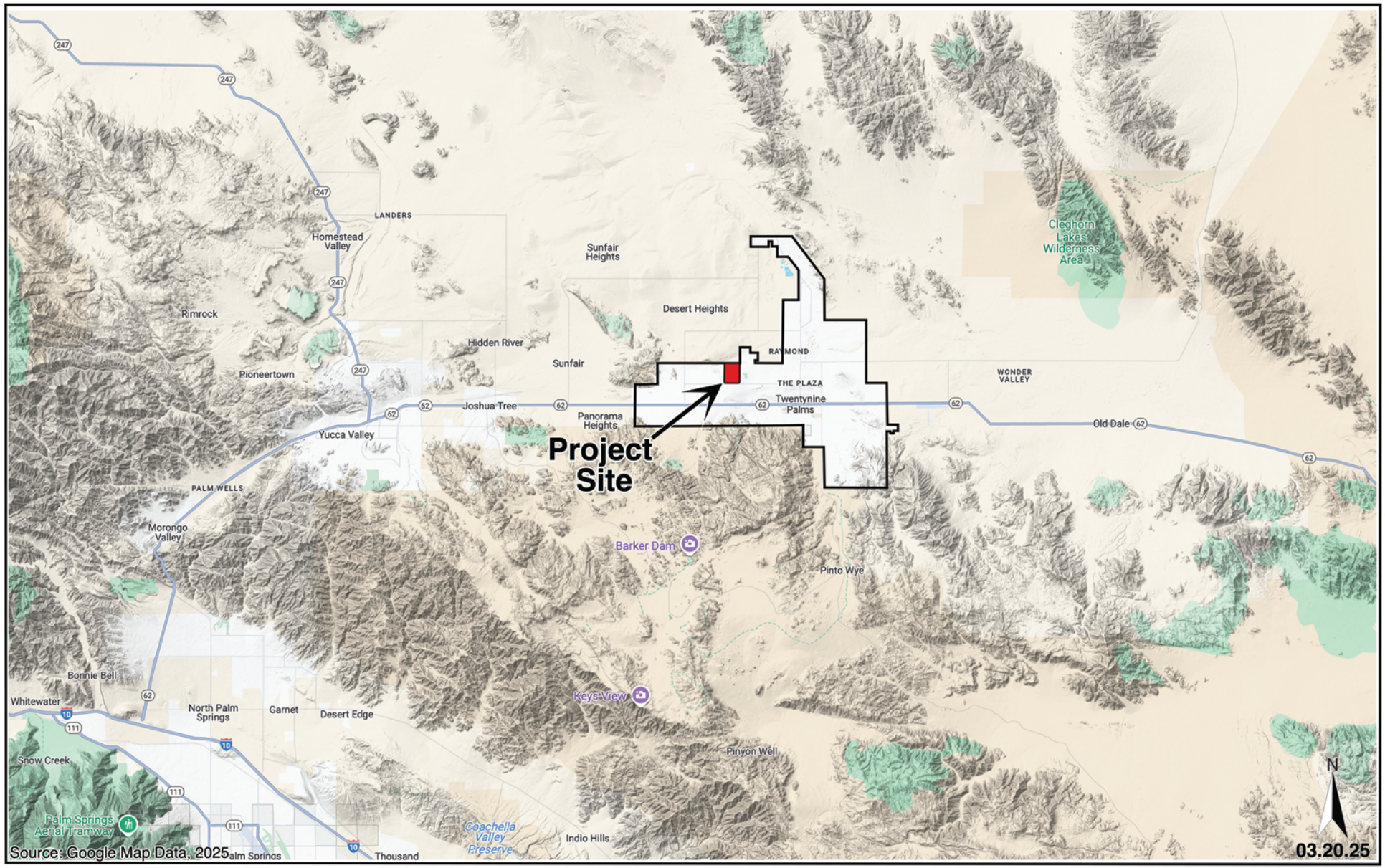
CEQA Guidelines Section 15126.6 sets forth criteria for selecting and evaluating alternatives. The City has developed alternatives to the Project, in order to provide the public and decision makers with an understanding of what could reduce potentially significant impacts of the Project to less than significant levels. These alternatives are briefly described in Section 1.12, below, and thoroughly analyzed in Section 3 of this document.



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Regional Location Map
Solar Field Project
Twentynine Palms, California

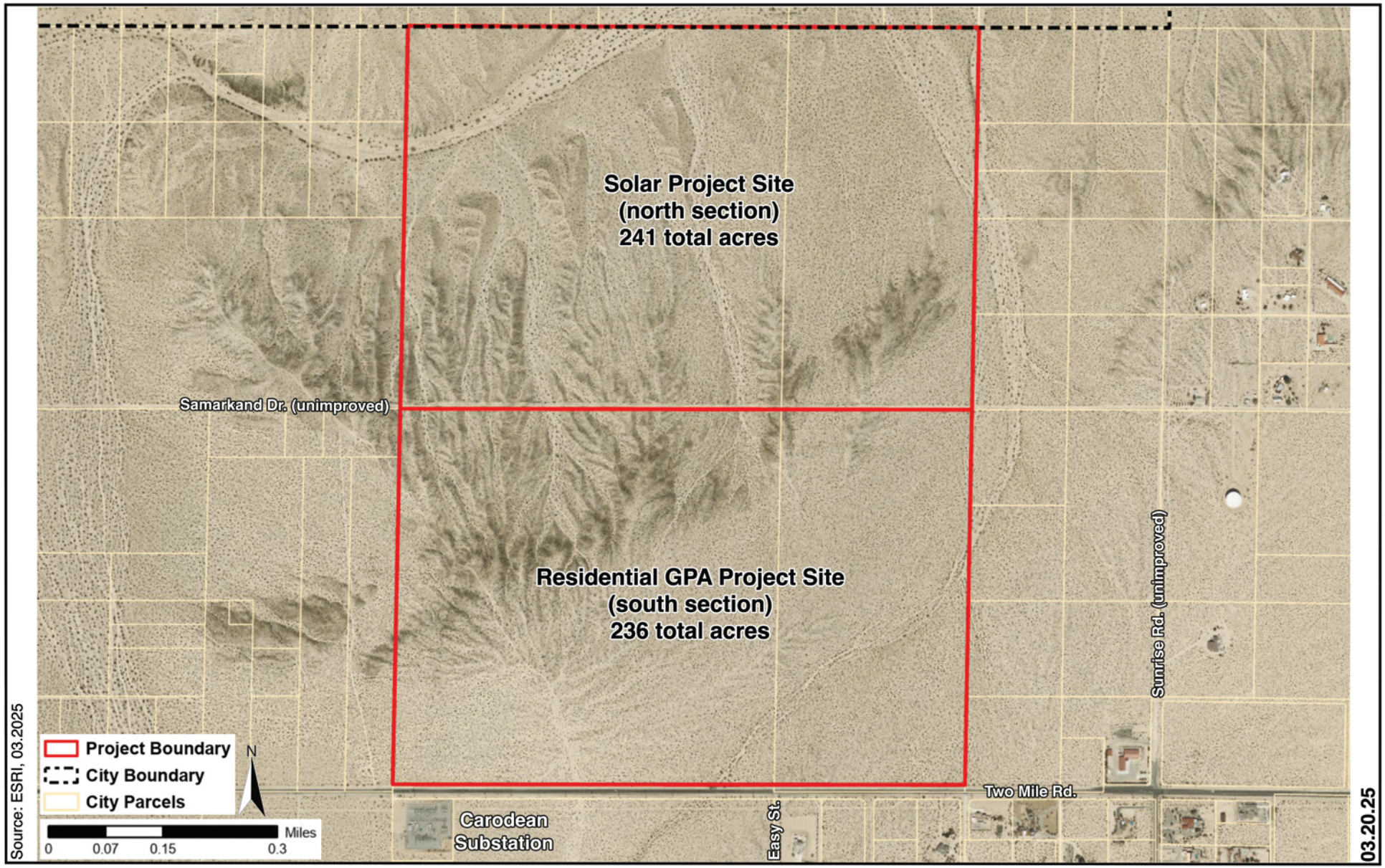
Exhibit
1-1



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Vicinity Map
Solar Field Project
Twentynine Palms, California

Exhibit
1-2



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Project Area
Solar Field Project
Twentynine Palms, California

Exhibit
1-3



Source: City of Twentynine Palms Land Use Map, revised December 12, 2022

03.20.25

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Existing Land Use and Zoning
Solar Field Project
Twentynine Palms, California

Exhibit
1-4



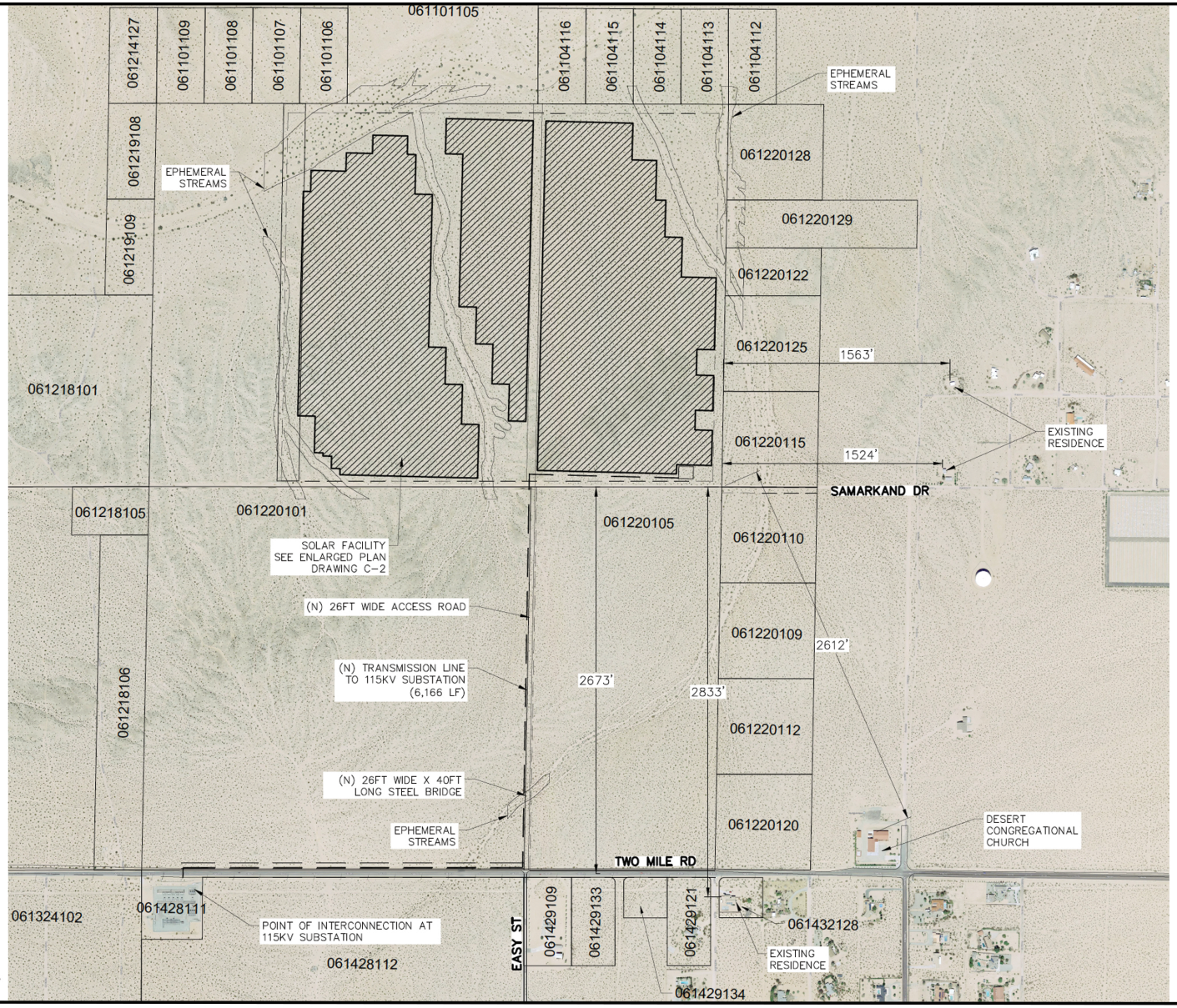
Source: City of Twentynine Palms Land Use Map, revised December 12, 2022

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Proposed Land Use and Zoning
Solar Field Project
Twentynine Palms, California

Exhibit
1-5



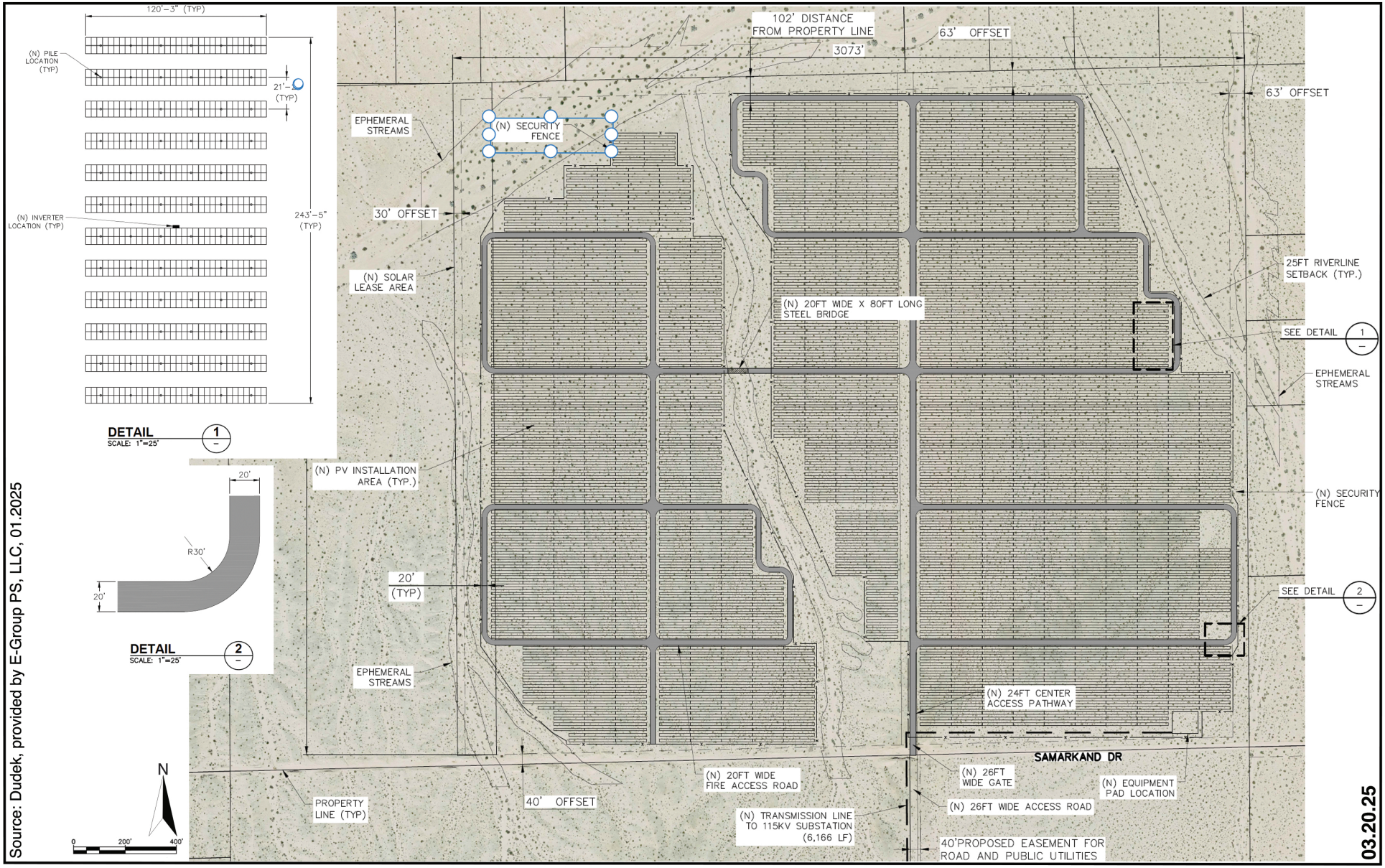
Source: Dudek, provided by E-Group PS, LLC, 01.2025

03.20.25

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Overall Project Site Plan
Solar Field Project
Twentynine Palms, California

Exhibit
1-6



TERRA NOVA®
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Solar Project Site Plan Detail
Solar Field Project
Twentynine Palms, California

Exhibit
1-7



Source: E-Group PS, LLC, 06.2024

03.20.25

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Representative Solar Panel Racks
Solar Field Project
Twentynine Palms, California

Exhibit
1-8



Source: E-Group PS, LLC, 06.2024

03.20.25

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Prefabricated Bridge Design
Solar Field Project
Twentynine Palms, California

Exhibit
1-9

1.8 Required Approvals

The Project will require approval of local entitlements from the City, as well as permits and approvals from other agencies. The City's entitlements will consist of:

General Plan Amendment GPA23-000001: A General Plan Amendment (text and map) to create a new Renewable Energy (E) land use district, and to modify the land use designation on the northern 241-acres of the subject site from Rural Living (RL-5) to E. Associated text, graphics, and statistics within the General Plan will be updated accordingly.

General Plan Amendment GPA24-000001: A General Plan Amendment and Rezone to change the land use and zoning designations on 60 acres of the 119 acres of RL-5 designated land of parcels 0612-201-01 and 0612-201-05 south of the Solar Project to RS-1.

Development Code Amendment DCA23-000016: A Development Code Amendment to create a new Renewable Energy (E) district. A new section of the Development Code will be created to establish the allowable uses and development standards in the E land use district.

Rezone REZ23-000001: A Rezone to modify the zoning map on the northern 241-acres of the subject site from Rural Living (RL-5) to E.

Rezone REZ24-000001: A Rezone to modify the zoning map on 60 acres of the southern 119 acres of Rural Living (RL-5) land to Single-Family Residential (RS-1).

Conditional Use Permit CUP23-000009: A Conditional Use Permit to allow the Solar Project to be constructed on the site.

Development Agreement DA23-000001: A Development Agreement is proposed for the Solar Project. In addition to providing the applicant with a vested right to develop the Project, the Development Agreement addresses the provision of community benefit payments to the City, and the dedication of surrounding roadway right-of-way.

The Project referenced in this document encompasses all of the applications described above. When "Solar Project" is used, it references actions directly associated with GPA23-000001, DCA23-000016, REZ23-000001, CUP23-000009 and the DA23-000001.

In addition, the Project will require the approval of improvement plans and building permits for both the Solar Project and Residential GPA construction from the City and the Fire Department.

Additional review and permitting will also be required from various federal, state, and local agencies. Anticipated discretionary approvals (subject to confirmation by the relevant agencies), include:

United States Fish and Wildlife Service: Review and approval of an Incidental Take Permit (ITP) consistent with the Endangered Species Act (ESA) for desert tortoise.

California Department of Fish and Wildlife: Review and approval of an ITP consistent with the California Endangered Species Act (CESA) for desert tortoise and burrowing owl (if identified on the site); and possibly a Streambed Alteration Agreement under Section 1602 of the California Fish and Game Code.

Mojave Desert Air Quality Management District: Review and approval of dust control and construction management plans.

Regional Water Quality Control Board, Colorado River Region 7: Review and approval of Stormwater Pollution Prevention Plan and General Construction Permit.

1.9 CEQA Process

California Environmental Quality Act
The EIR has been prepared in accordance with CEQA (as amended), pursuant to State CEQA Guidelines §15121 (Informational Document) and the City's Rules to Implement CEQA:

- *An EIR is an informational document which will inform public agency decision makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The public agency shall consider the information in the EIR along with other information which may be presented to the agency.*
- *While the information in the EIR does not control the agency's ultimate discretion on the project, the agency must respond to each significant effect identified in the EIR by making findings under Section 15091 and if necessary by making a statement of overriding consideration under Section 15093.*

- *The information in an EIR may constitute substantial evidence in the record to support the agency's action on the project if its decision is later challenged in court.*

1.9.1 Notice of Preparation

In accordance with Sections 15063, 15064 and 15065 of the State CEQA Guidelines, the City prepared an Initial Study and Notice of Preparation (NOP) to identify potentially significant impacts associated with the proposed Project. Based on the preliminary assessment, the City determined that an EIR should be prepared to evaluate the potential environmental effects associated with the implementation of the Project (please see Appendix A). The Initial Study found that the Project could have potentially significant impacts related to aesthetics, biological resources, geology/soils, cultural resources, land use/permitting, and Tribal cultural resources; and potentially significant impacts requiring mitigation as described in Appendix A.

The purpose of an NOP is to outline the City's preliminary findings regarding the impacts of the Project, and to solicit input from agencies and other parties of interest, including the general public.

The NOP was released on February 28, 2024, and the 30-day public review period concluded on March 29, 2024. The City also conducted a scoping meeting during the public review period, on March 21, 2024. A total of 21 persons completed the sign-in sheet for the meeting, and total attendance was slightly greater than that number. Most attendees were City or area residents. The primary concerns raised by residents related to extensive grading and dust/air quality impacts for downwind (easterly) residents; impacts to biological resources including desert tortoise and burrowing owl; impacts to viewsheds of the desert floor from residential areas to the east; off-site drainage impacts from extensive grading; land use compatibility associated with locating a commercial/industrial project next to a residential area; and disruption of soil and creosote and associated carbon sequestration.

The NOP (see Appendix A) was submitted to the San Bernardino County Clerk for 30-day posting. The NOP was also submitted to the State of California Governor's Office of Planning and Research, State Clearinghouse (SCH), which circulated the NOP to state agencies for a 30-day review and comment period. A public notice was also published in the Desert Trail, a newspaper of general circulation, on February 28, 2024. A total of 43 written comments were received, primarily from area residents (see Appendix A). In addition, the Morongo Band of Mission Indians, the County Airports, the Twentynine Palms Band of Mission Indians, the Agua Caliente Band of Cahuilla Indians, the Mojave Desert Air Quality Management District, and the Native American Heritage Commission submitted comments on

the NOP. All comments were reviewed and have been addressed where/if applicable in Section 2 of this EIR. The agencies/districts/parties who provided comments will receive notification and Draft EIR materials to review during the public comment period process.

Following the distribution of the NOP, the applicant's request for a General Plan Amendment to offset the loss of residential units caused by the Solar Project was modified, resulting in a decrease in total potential residential units as described in Section 1.4 above.

1.9.2 Areas of Controversy

Based the written comments received during the NOP public review period and the scoping meeting, the City has identified the following areas of controversy:

- Aesthetics and Glare
- Air Quality/Dust Control
- Biological Resources
- Hydrology
- Land Use Compatibility

1.9.3 Draft EIR

This Draft EIR is being circulated along with the Notice of Availability and Notice of Completion for public review for a 45-day review period, in accordance with State CEQA Guidelines Section 15085.

1.9.4 Final EIR

Following the public review and comment period, the City will prepare written responses to the written comments received on the Draft EIR. The Draft EIR and the Response to Comments constitute the Final EIR. In accordance with State CEQA Guidelines Sections 15090-15097, the City of Twentynine Palms City Council will be the final authority certifying the Final EIR during a noticed public hearing.

CEQA requires the adoption of findings prior to approval of a project where a certified Final EIR identifies one or more significant environmental effects that would be caused by implementation of a project. If the project that is approved would result in significant unmitigated effects that are identified in the Final EIR and that cannot be avoided or substantially lessened, the City shall state in writing in a "statement of overriding considerations" the specific reasons to support its action based on the Final EIR and/or other information in the record. In the case of the proposed Project, impacts associated with visual character have been identified as significant and unavoidable.

Following Final EIR certification, the City may proceed with consideration of proposed Project. If the Project is approved, the City would file a Notice of Determination (NOD) with the County Clerk and State Clearinghouse within five working days following Project approval.

1.9.5 Mitigation Monitoring and Reporting

CEQA requires lead agencies to adopt a Mitigation Monitoring and Reporting Program (MMRP) at the same time the Final EIR is certified. The MMRP is a verification tool for use by the Lead Agency that lists the mitigation program task, entity responsible for implementation, timing of compliance, and record of date of compliance. Once the Final EIR and MMRP are certified, the mitigation measures become conditions of the Project.

1.9.6 Organization of the Draft EIR

This Draft EIR is organized as follows:

Environmental Matrix - Summary of Project Impacts and Mitigation

Section 1 – Introduction and Project Description. The section includes a description of the proposed Project and summarizes construction and operational characteristics of the proposed Project. Areas of controversy are also identified. This section describes the CEQA process and the organization of this document.

Section 2 – Environmental Setting, Impacts and Mitigation Measures. The environmental setting discussion provides important background data and information on all CEQA analysis categories on a regional and area-wide basis. This section of the EIR serves to establish the physical context within which the Project is being considered and analyzed.

It also presents the physical and regulatory setting by environmental resource category, identifies impact significance criteria, and analyzes potential impacts of the Project. Because the Project proposes a General Plan Amendment and Rezone that would modify existing residential zoning for a portion of the Project site, but does not propose any residential development, impacts associated with the proposed residential Rezone are evaluated at the level of detail appropriate for a "first tier EIR" pursuant to CEQA Guidelines Section 15152. Further review of project-specific impacts will be required if and when residential development is proposed within the Project site.

The analysis also includes consideration of potential cumulative impacts. Cumulative impacts were calculated using the General Plan build out method, which aggregates the Project's impacts with those associated with other

development planned under current General Plan land use designations. This approach was determined to be appropriate given the changes to the General Plan and zoning proposed by the Project and because there are no closely related presently proposed or reasonably foreseeable projects within the Project area that would be relevant to a cumulative impacts analysis. Mitigation measures and monitoring and reporting programs are identified, where applicable. Section 2 contains the following subsections:

- Introduction (Section 2.1)
- Summary of Environmental Impact Analysis (Section 2.2)
- Aesthetics (Section 2.3)
- Air Quality (Section 2.4)
- Biological Resources (Section 2.5)
- Cultural Resources (Section 2.6)
- Energy (Section 2.7)
- Geology and Soils (Section 2.8)
- Greenhouse Gas Emissions (Section 2.9)
- Hazards and Hazardous Materials (Section 2.10)
- Hydrology and Water Quality (Section 2.11)
- Land Use and Planning (Section 2.12)
- Noise (Section 2.13)
- Population and Housing (Section 2.14)
- Public Services (Section 2.15)
- Recreation (Section 2.16)
- Transportation and Traffic (Section 2.17)
- Tribal Cultural Resources (Section 2.18)
- Utilities and Service Systems (Section 2.19)

Impact Categories Not Further Analyzed

The Initial Study prepared for the NOP (Appendix A) and this EIR evaluate each of the analysis categories set forth in Appendix G of the CEQA Guidelines, with three exceptions. No impacts were identified in the NOP relating to Agriculture and Forest Resources, Mineral Resources, and Wildfire. As described further in the NOP, a summary of the reasons for the No Impact determination follows:

Agriculture and Forest Resources: There are no Prime or Unique Farmlands, of Farmlands of Statewide Importance on or surrounding the Project site. The City is in an arid high desert climatic zone, and does not support farming. There are no Williamson Act contracts on or surrounding the Project site, nor are lands designated by the City for agricultural purposes located in the City. The City's General Plan does not designate lands for forest resources, nor are forested lands located in the City, due to its arid climate.

Mineral Resources: No State or locally designated mineral resources are identified in the City.

Wildfire: The Project does not occur in or adjacent to either a state responsibility area or a very high fire hazard severity zone. The sparse vegetation surrounding the City does not provide fuel for wildfires.

These analysis categories are not further analyzed in this EIR.

Section 3 – Project Alternatives Analysis. This section describes alternatives to the proposed Project that have the potential to further reduce significant impacts associated with the proposed Project and compares their impacts to those of the Project. This section also identifies which alternative is environmentally superior on a categorical basis and overall.

Section 4 – Unavoidable Significant Impacts. This section discusses significant environmental effects that cannot be avoided if the Project is implemented, and significant irreversible environmental changes associated with the Project. This section also provides a summary of any significant unavoidable cumulative impacts that are discussed in the resource sections.

Section 5 – Irreversible and Irretrievable Commitment of Resources. This section evaluates the Project's effects on natural resources, including energy and water, and the level of commitment of these resources associated with the Project.

Section 6 – Growth Inducing Impacts. This section discusses the Project's potential to induce growth both locally and regionally.

Section 7 – Organizations, Persons and Documents Consulted. This section describes and lists the various parties, agencies, documents and other resources used in preparing the subject EIR.

Technical Appendices - provide information in support of the above sections and are identified in the Table of Contents.

1.10 Responsible and Cooperating Agencies

Under CEQA, provision is made for state agencies to act as "Responsible Agencies." Per California Public Resources Code Section 21069, a "Responsible Agency" is a public agency, other than the Lead Agency, which has responsibility for carrying out or approving a project. The authority of responsible agencies that may have responsibility for carrying out or approving a project and for complying with CEQA is limited to that part of the project that they will be called upon to

carry out or approve (Public Resources Code Sections 21140(c), 21153(c); CEQA Guidelines Sections 15041(b), 15042). In this case, if the City, as Lead Agency, certifies the EIR, State and federal agencies with permitting authority, including those identified above, would then be able to consider the Project and act on their permits.

1.11 Project's Relationship to Other Plans

Regional Plans

The Project will be considered in the context of the Southern California Association of Governments' 2020-2045 Regional Transportation Plan and Sustainable Communities Strategy, and the Mojave Desert Air Quality Management District's plans and rules. In addition, topic-specific plans and regulations are addressed categorically in Section 2 of this document.

Local Plans

The Project is subject to, and proposes to amend, the City's General Plan and its Development Code. Analysis of these documents, including applicable goals, policies and programs, is provided for each issue area in Section 2.

1.12 Project Alternatives

Section 3, Project Alternatives Analysis, evaluates three alternatives to the proposed Project, and evaluates the comparative merits of each alternative. Potential environmental impacts associated with each alternative evaluated in Section 3 are compared to the impacts of the Project. The alternatives were developed to avoid or minimize impacts associated with implementation of the proposed Project, and in consideration of existing General Plan land use designations.

Alternative 1: No Project/No Construction

This Alternative assumes that the Project site (477 acres) would remain vacant desert land.

Alternative 2: No Project/Existing General Plan

Under Alternative 2, the site would develop as currently designated in the General Plan. The result of this Alternative would be the construction of 72 single family homes on the 360± acres of RL-5 designated land, and 47 single family homes on the 117± acres of RS-E land within the Project limits. Under this alternative, the Project area would build out as a standard large-lot subdivision, with improvements to public roadways on all sides, as well as a new internal street system. Although no configuration of lots has been developed, it would be expected that these 119 housing units would develop to City standards in the RL-5 and RS-E zones.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in 80± acres of commercial solar development on the north half of the eastern parcel, between the City's north boundary and Samarkand Drive. Under this alternative, the solar component would reduce the City's residential capacity under SB 330, requiring a General Plan and Zoning map amendment on 20 acres of the southern half of the eastern parcel to Single Family Residential (RS-E), which would generate up to 20 single family homes. The western 317± acre parcel would be developed under the current residential designations, and would generate up to 52 single family homes on 259 acres of RL-5 land and 47 homes on 117 acres of RS-E land. Although no lot configuration is known, this alternative would be expected to pave adjacent roadways as part of the residential development, and the 119 residential units would be expected to develop to City standards in the RL-5, RS-E and RS-1 zones.

CEQA Guidelines Section 15126.6 (e)(2) states that if the environmentally superior alternative is the No Project Alternative, then an environmentally superior alternative must be identified from among the other alternatives. While identification and disclosure of the environmentally superior alternative is required by CEQA, the City is not required to approve the environmentally superior alternative.

1.13 Other Alternatives Considered but Not Further Analyzed

The Alternative Site alternative was considered, but no alternative site was available for sale or lease or met the Project objectives. The distance to existing substations and site topography made these sites infeasible, and would have resulted in substantially more site disturbance and grading through the extension of much longer gen-tie lines to connect to a substation. Furthermore, the sites were not operationally feasible as they were shaded by surrounding topography and therefore did not provide sufficient irradiation required for utility-scale solar facilities; and the sites would not significantly lessen the visual and aesthetic impacts of the Project. As a result, the alternative was rejected.

CITY OF TWENTYNINE PALMS SOLAR PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT

2. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

2.1 Introduction

This section of the EIR addresses the potential impacts of the proposed Project on each resource topic listed in Section 2.2. The text describes the existing conditions on the land and its surroundings, establishes the regulatory environment under which impacts are analyzed, and considers the impacts of the solar Project, the Residential General Plan Amendment and off-site improvements for each resource topic. Where potentially significant impacts are identified, mitigation measures have been developed to reduce those impacts to less than significant levels. If no mitigation exists, or if mitigation measures will not reduce impacts to less than significant levels, the impacts are determined to be significant and unavoidable.

2.2 Summary of Environmental Impact Analysis

The following resource topics are assessed for potential impacts associated with the proposed Project:

- Aesthetics in Section 2.3
- Air Quality in Section 2.4
- Biological Resources in Section 2.5
- Cultural Resources in Section 2.6

- Energy Resources in Section 2.7
- Geology and Soils in Section 2.8
- Greenhouse Gas Emissions in Section 2.9
- Hazards and Hazardous Materials in Section 2.10
- Hydrology and Water Quality in Section 2.11
- Land Use in Section 2.12
- Noise in Section 2.13
- Population, Housing and Socio-Economic Resources in Section 2.14
- Public Services in Section 2.15
- Recreational Resources in Section 2.16
- Transportation and Traffic in Section 2.17
- Tribal Cultural Resources in Section 2.18
- Utilities and Service Systems in Section 2.19

As determined in the Initial Study/Notice of Preparation, the Project will not impact Agriculture and Forestry Resources, Mineral Resources, and Wildfire. Therefore, these three sections will not be discussed further in this EIR. Individual questions within each of the above subsections for which No Impact was determined in the Initial Study/Notice of Preparation are identified individually in each subsection of Section 2.

The discussion of each of the resource topics contains:

Threshold of Significance: This subsection identifies the CEQA thresholds that are applicable to the resource topic and the Project.

Regulatory Framework: This subsection provides a brief discussion of federal, State, and local regulations and policies that are applicable to the resource topic and the Project.

Environmental Setting: This subsection provides an overview of the regional environmental setting in which the proposed Project is located, with particular emphasis on the environmental constraints and resources most likely to be affected by implementation of the Project.

Existing Conditions: This subsection presents a description of the existing physical environmental conditions at and in the immediate vicinity of the Project site with respect to each resource area, at an appropriate level of detail to understand the impact analysis.

Impacts and Mitigation Measures: This subsection analyzes the specific impacts of the proposed Project on each question provided in Appendix G of the CEQA Guidelines. The analysis focuses on the solar Project, the Residential General Plan

Amendment and off-site improvements. Where necessary, mitigation measures are included to reduce identified significant impacts to less than significant levels to the greatest extent possible.

Cumulative Impacts: This subsection addresses the proposed Project's cumulative impacts, when considered with General Plan build out or other factors identified for each resource area. Cumulative impacts were calculated using the General Plan build out method, which aggregates the Project's impacts with those associated with other development planned under current General Plan land use designations. This approach was determined to be appropriate given the changes to the General Plan and zoning proposed by the Project and because there are no closely related presently proposed or reasonably foreseeable projects within the Project area that would be relevant to a cumulative impacts analysis.

2.3 Aesthetics

2.3.1 Introduction

The following discussion assesses the impacts of the Solar Project and the Residential GPA on the scenic quality of the location in which this entire Project occurs. Aesthetic impacts could occur if the proposed Project, either during construction or operation, would alter the scenic vistas or visual character of the area as viewed by the public. Also addressed are potential impacts from light and glare emitted during and after construction. The analysis is based, in part, on visual simulations of the Solar Project prepared by the applicant.

Concepts and Terminology

The following section describes the terms used in this aesthetics evaluation. Aesthetic resources are typically defined as both the natural and built environments of the surrounding landscape that influence the public's enjoyment and appreciation of the environment. A visual or aesthetic impact may occur depending on the extent to which a project's presence would alter the visual character of the area in which it is located.

Visual Character

Changes in the visual character of the existing landscape can be measured by the degree to which the proposed project would be visually compatible with the existing environment. Existing visual characteristics of the Project site that are considered include form, line, color and texture. Attributes of the proposed Solar Project and the Residential GPA that are considered include the following:

Dominance is the position, size, or contrast;
Scale is the apparent size as it relates to the surroundings;
Form is the visual mass or shape;
Color is reflective brightness (light or dark) and hue (red, green);
Continuity is the interrupted flow of form, line, color, or textural pattern.

Visual Quality

Visual quality is assessed by considering vividness, intactness, and unity of the surrounding landscape. Public attitudes inform this assessed value and predict how changes to the visual quality will result in impacts.

Vividness includes the aspects of a landscape that offer distinctive, contrasting, or diverse visual elements that can be used to measure a site's level of vividness.
Intactness refers to the level of integrity of the visual features and the extent to which the landscape is uninterrupted by non-typical elements.

Unity is measured by the extent to which visual elements of a project site and the surrounding landscape create a harmonious visual pattern.

2.3.2 Thresholds of Significance

Based on Appendix G of the 2025 State CEQA Guidelines, impacts related to aesthetics would be significant if the Proposed Project would:

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 non-urbanized 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 Initial Study determined that the Project would result in "No Impact' for threshold question b). There are no state or federal scenic highways in proximity of the project. Therefore, question b) is not analyzed further in this EIR.

2.3.3 Regulatory Framework

Federal
There are no federal regulations governing the aesthetic impacts of either the Solar Project or the Residential GPA.

State
There are no state regulations governing the aesthetic impacts of either the Solar Project or the Residential GPA.

Regional/Local

City of Twentynine Palms General Plan 2012[1]
Aesthetic characteristics of new development and redevelopment throughout the City of Twentynine Palms are regulated by the City's General Plan. Land use maps, goals, and policies guide planning processes to ensure all development aligns with the City's aesthetic and visual principles.

[1] City of Twentynine Palms General Plan 2012, Land Use Element, and Conservation and Open Space Element, accessed March 12, 2024.

Goal LU-2 Protect existing neighborhoods and the area's natural surroundings by encouraging development that is compatible with the City's small-town character.

Policy LU-2.1 Development shall be consistent with underlying land use densities and intensities.

Policy LU-2.3 Require that new development be sensitive to neighborhood context and development scale.

Goal LU-3 Promote a high quality of life by encouraging attractive high-quality development that is compatible with existing uses and the City's desert environment.

Policy LU 3.1 Encourage high quality attractive residential neighborhoods, economically viable and attractive commercial and industrial areas, and high-quality public uses.

Policy LU-3.2 Encourage residential development that enhances the visual character, quality and uniqueness of the City's desert environment.

Policy LU-3.11 Preserve, protect and maintain open space, parks and recreation facilities as desirable land uses, recognizing that such uses contribute to the high quality of life in Twentynine Palms.

Policy LU-3.13 Encourage the transition of incompatible, ineffective and/or undesirable land uses to attractive land uses that will provide high quality residential, commercial or industrial developments.

Policy LU-3.16 Protect the desert night sky by requiring that private lighting be installed in a manner that perpetuates the view of the stars in the evening, such as shielding outdoor lighting to protect adjacent and nearby residential districts and public rights-of-way.

Policy LU-7.4 Discourage development in the hillsides or other areas where such development would require significant infrastructure investment adversely impacting natural resources and/or creating adverse visual impacts.

Goal LU-7 Protect and preserve Twentynine Palms natural resources, promote the existing quality of life and prepare for future residents and businesses by promoting superior sustainable development.

Policy LU-7.2 Development shall be sustainable in its use of land and shall limit impact to natural resources, energy, and air and water quality.

Policy LU-7.5 Allow clustering of residential development in sensitive areas of the City to protect and preserve the area's natural resources for future generations.

Goal CO-6 Preserve quality nighttime views within the City.

Policy CO-6.1 Adopt night sky preservation regulations that limit the amount of and type of lighting within rural style developments.

Policy CO-6.2 Require shielding of outdoor lighting and that lighting be designed and installed in a manner that confines the direct light rays to the property upon with the lighting is installed.

Policy CO-6.3 Require lighting in and near residential areas to be minimal and shielded to prevent nuisance glare.

Policy CO-6.4 Enforce City lighting standards as detailed in the City's Development Code.

Goal CO-7 Develop regulations and programs to encourages sustainable practices in land use, use of buildings and for development and construction.

Policy CO-7.4 Develop provisions within the development and building codes to encourage and allow alternative energy facilities and equipment to be installed and developed on individual properties to serve that property.

Goal HS-2 Promote and encourage housing development that adequately meets the needs of all socioeconomic segments of the community.

Policy HS-2.7 Provide adequate sites for the development of new housing through appropriate land use and zoning designations to accommodate the City's share of regional housing needs.

Twentynine Palms Municipal Code

The City's Code of General Ordinances provides specific guidelines to help city officials, residents, developers, and other interested parties to conform to the aesthetic goals and policies described in the General Plan.

Code 19.78.050 Lighting Development Standards - General

A. Shielding Requirements. All outdoor lighting, except as specified in Subsection 19.70.040.C (Exemptions) shall be fully shielded. Examples of appropriate fixtures are shown in Figure 19.78.050-1 (Examples of Acceptable/Unacceptable Lighting Fixtures).

B. Level of Illumination. Outdoor lighting shall be designed to illuminate at the minimum level necessary for safety and security and to avoid the harsh contrasts in lighting levels between the project site and adjacent properties. Illumination requirements are provided in Table 19.78.050-2 (Illumination Requirements) and are measured at ground level, unless otherwise noted.

Table 2.3-1
Municipal Code Lighting Standards (Table 19.78.050-2)

Category	Where Measured	Required Illumination (minimum or maximum)	Notes
Public, civic, and religious buildings		Permitted to be fully illuminated during hours of operation. After hours, may be dimmed or turned off such that only lighting essential to security or safety shall be maintained.	
General			
Parking lots, driveways, trash enclosures, public phones, group mailboxes	Within 2-foot radius of object edge	1.0 foot-candle (minimum) and 4.0 foot-candles (maximum)	At all hours
Parking lots for banks, convenience stores, check cashing businesses	At point of highest and lowest light level	1.5 foot-candle (minimum) and 4.0 foot-candles (maximum)	During operating hours

Table 2.3-1
Municipal Code Lighting Standards (Table 19.78.050-2)

Category	Where Measured	Required Illumination (minimum or maximum)	Notes
Parking lots for residential land uses	At point of highest and lowest light level	0.5 foot-candle (minimum) and 2.0 foot-candles (maximum)	During hours of darkness
Pedestrian walkways	Center of walkway at point of highest and lowest light level	0.5 foot-candle (minimum) and 2.0 foot-candles (maximum)	Only applies to walkways intended for use after dark
Nonresidential structures, entryways, and doors	5-foot radius of door (each side)	5.0 foot-candle (maximum)	During hours of darkness
Adjacent residential property	At structure and rear setback line	0.05 foot-candle (maximum)	

2.3.4 Environmental Setting

The City of Twentynine Palms is located in the eastern Morongo Basin within the Desert Region of San Bernardino County. Distant mountain ranges, bajadas sloping into broad valleys, and scattered dry lakes characterize the surrounding vicinity. Local topography includes vast flat expanses of desert creosote scrub interrupted by ephemeral streams and drainage systems which have resulted in alternating flats and washes throughout the landscape. Low elevation rocky outcroppings, remnants of ancient and eroded mountains dot the panorama. The horizonal ground views are topped with higher elevation mountain ranges, which accentuate wide open skies.

The Morongo Basin is located in the southwestern corner of the Mojave Desert ecosystem. Joshua Tree National Park and the Little San Bernardino Mountains form the southern border of the Basin. The eastern foothills of the Little San Bernardino Mountains and the Mount San Gorgonio Wilderness dip down into the west end of the Basin. The sprawling desert creosote-covered Surprise Valley stretches northward and meets the Bullion Mountains which flank the northeastern edge of the Basin. Just beyond the City's east border, the rural desert community of Wonder Valley continues eastward.

2.3.5 Existing Conditions

The solar component of the Project is proposed for the City's rural western section and extends south from the City's north boundary at Amboy Road just west of Noel's Knoll Road (extended). The two parcels where the Solar Project and the Residential GPA would occur encompass 477± acres of vacant undeveloped

desert land. The Solar Project would occupy 184± acres north of Samarkand Drive and west of Noel's Knoll Road, which present a broad open desert vista from surrounding roadways. Natural washes also cross the site, and are visible from surrounding areas. The Residential GPA would be on the south portion of the site extending south from Samarkand Drive to Two Mile Road, and presents a similar broad desert vista.

Two Mile Road, the only paved road in the immediate Project vicinity, runs east-west along the south boundaries of the two parcels where the Residential GPA is proposed. One-half mile to the north of, and parallel to Two Mile Road is Samarkand Drive (unimproved) which forms the boundary between the proposed Solar Project to the north and the Residential GPA to the south.

Scattered large-lot single family homes occur on the south side of Two Mile Road. The Carodean substation also occurs at the south side of Two Mile Road, at the southwestern boundary of the Project area. There is limited visibility of the substation from the east, due to the rising slope of Two Mile Road as it borders the Project site. From the west, the rise of the Project site and its open desert are clearly visible to the north, and open desert, the substation and the scattered homes are visible to the south. Electric transmission lines also extend the length of Two Mile Road and along Lear Avenue further to the west. From existing dirt roads, which primarily occur east of the Project site, scattered single family homes and the open vistas of the Project site are visible, as is a water tank 1,100 feet east of the Project site and the City cemetery 2,000 feet east of the Project site, both south of Samarkand Drive.

The General Plan also includes, in its Recreation Element, future plans for a City-spanning multi-purpose trail (General Plan Exhibit RE-3) that is proposed to run immediately north of the Solar Project site. As shown in Exhibit RE-2 to the General Plan, said trail would extend from Utah Trail in the east to Mantonya Road in the west on the north side of the City, generally occurring north and parallel to Amboy Road. At the Project site, this trail would occur immediately north of the Project site at Amboy Road.

One mile north of the Solar Project site is the rural community of Desert Heights containing single-family residences within a Rural Living (RL-5) zoning designation. The Twentynine Palms Marine Corps base occurs to the northeast. Beyond Desert Heights and the Marine Corp base, Surprise Valley and the Bullion Mountains, with elevations averaging 3,400 feet, form the backdrop.

The 120-acre SEPV2 and SEPV8 Solar Farms are located approximately 2 miles northwest of the Project site, north of Amboy Road on Lear Avenue. The 80-acre SEPV9 Solar Farm is located approximately 2.2 miles northeast of the Project site on Indian Trail adjacent to Morongo Road. Neither is visible from either the Project

site or roadways adjacent to the Project site, due to topography and distance, although they are likely visible from some residences along Samarkand Drive between Morongo Road and Encelia Drive.

Existing Visual Environment

Overall, the visual character of the entire Project site, including the proposed Solar Project and Residential GPA, can be described as a broad, gently sloping alluvial fan with a maximum elevation of 2,360'± in the southwest corner at Two Mile Road and a minimum elevation of 2,260'± on the Project site north boundary. The site has an overall slope of approximately 5.6% from the high point at its southern boundary and is comprised of relatively light tan sandy soils. The on-site and surrounding creosote scrub community includes large shrubs and small trees. Views to the north across the site are of gently descending terrain with native desert vegetation, with low hills and mountains in the distance. Southerly views south of Two Mile Road and the Project site are of gently rising terrain with views of the upper slopes of the Cottonwood Mountains within Joshua Tree National Park.

Affected Viewers

Public viewers who could be affected by the Solar Project and Residential GPA include travelers on Two Mile Road, Sunrise Road, and Samarkand Drive. Private viewpoints include residences occurring approximately 1,400 feet east of the Solar Project on the east side of Sunrise Road and north of Samarkand Drive and residences immediately south of Two Mile Road between Sunrise Road and Easy Street.

2.3.6 Project Impacts

a) Have a substantial adverse effect on a scenic vista?

Solar Project Impacts

A scenic vista is defined as a public view of highly valued visual and scenic resources exhibiting a unique or unusual feature such as mountains, hillsides, or bodies of water. While the City has not designated any official scenic vistas, a number of goals and policies set forth in the City's General Plan, including Land Use Goal LU-2 and Policy LU 7.4, speak to the importance of preserving the natural environment and discourage development in the hillsides or other areas where it would create adverse visual impacts. The scenic vistas in Twentynine Palms primarily consist of undisturbed creosote-bursage scrub alluvial plains and distant mountain ranges, all of which are highly valued by residents and visitors. If the proposed Project significantly and permanently diminishes the quality of the scenic vista, the impact would be significant.

Scenic Vistas and Character Viewed from the South

Looking north from Two Mile Road, the terrain appears to be relatively flat, however, the cuts made by ephemeral streams over many years form small hills and washes that interrupt the uniformity and form a partial visual barrier between Two Mile Road and Samarkand Drive. In the immediate view, creosote, white bursage, cholla cactus, and smoke trees dominate the lens. The topography of the two Project parcels rises between Two Mile Road and Samarkand Drive and then slopes downward toward the north into a wash where Amboy Road would continue east-west. Views of the distant mountains are visible from Two Mile Road from about Easy Street to the Project's eastern boundary. The Residential GPA would be sited on the higher ground along Two Mile Road while the Solar Project would be sited on the north sloping terrain north of Samarkand Drive. Please see Exhibits 2.3-1 and 2.3-2.

Scenic Vistas and Character Viewed from the West

Looking eastward from the southwest corner of the Project site, the Project site terrain clearly slopes down toward the north, and Two Mile Road rises to a high point about mid-way between the west boundary of the Project site and Easy Street, blocking easterly views. From Easy Street easterly, views of the distant mountains are visible to the northeast, and electric power poles and the ridges of Joshua Tree National Park are visible to the southeast. Creosote bush-white bursage plant community dots the landscape from the forefront to the horizon. The natural drainage system for the immediate vicinity begins in the central portion of the Residential zone south of Samarkand Drive and flows north through the Solar Project site. A series of north-south oriented gullies cross Samarkand Drive and spread into the Solar Project area (See Exhibit 1-3).

Scenic Vistas and Character Viewed from the North

Joshua Tree National Park, located 1.4 miles south of Two Mile Road, dominates the southward viewshed. The southward scenic vista looks onto the Wonderland of Rocks and the highest mountains of the Park, including Queen Mountain which has an elevation of 5,680 feet. These views are currently available from Two Mile Road, but will be unaffected by the Project, which occurs to the north.

Scenic Vistas and Character Viewed from the East

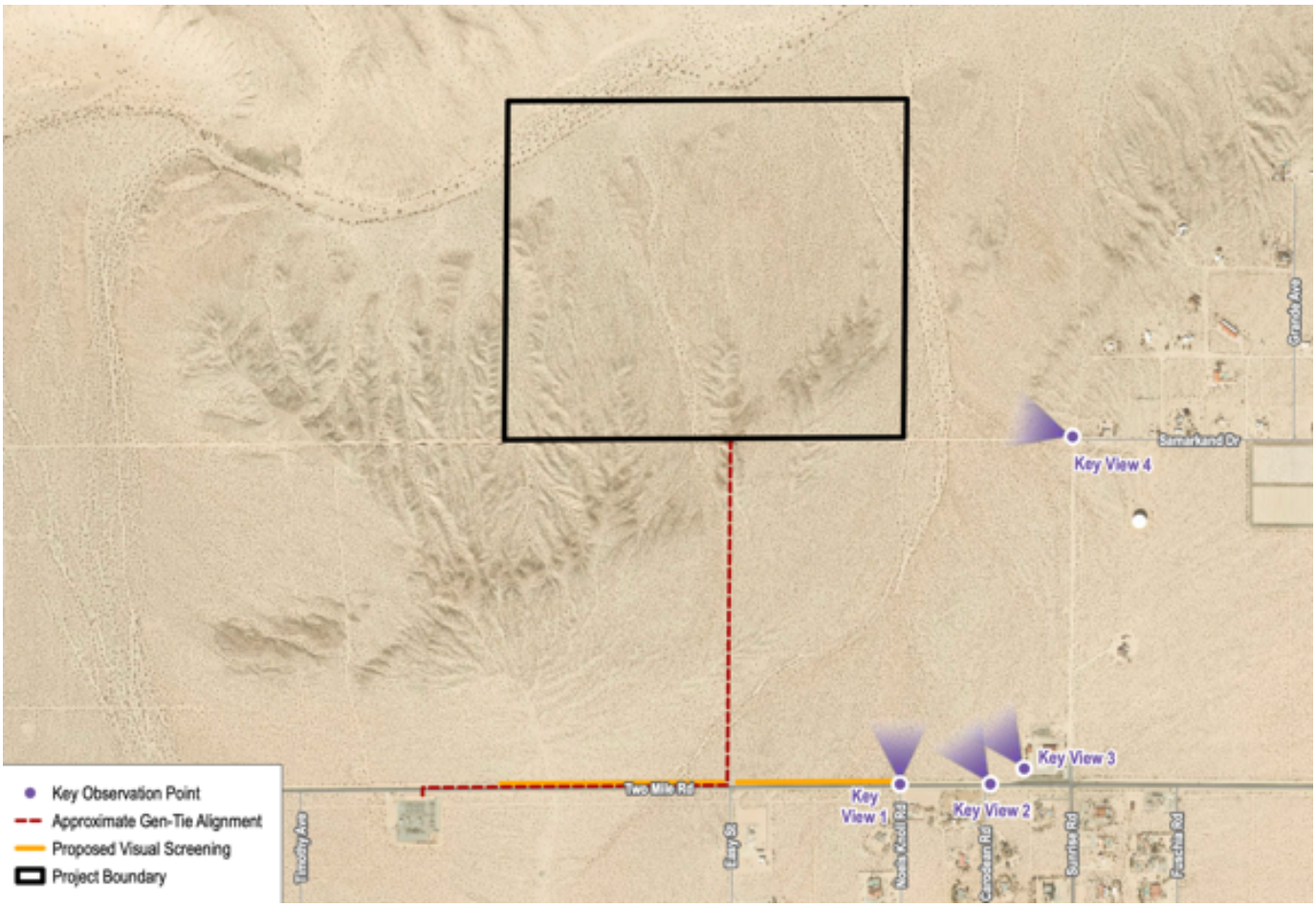
Views from the eastern boundary of the Project easterly consist of open desert in the foreground, and clear distant vistas of the mountains northeast and southeast of the site. Beyond this open desert, an existing water tank and limited views of single family homes to the east occur, with distant mountain views beyond.

The immediate terrain stretching west contains creosote scrub vegetation on the Project site. From Noels Knoll Road (extended) and Samarkand Drive, views to the east include scattered existing single family homes and the cemetery. At this location looking westerly, the topography is relatively flat, and the native environment within the Project site is clearly visible (See Exhibit 2.3-4).

Analysis

In order to assess the Solar Project's impacts on scenic vistas, the applicant prepared visual simulations from four locations, as shown in Figure 2.3-1. The locations were selected because of their proximity to the Project site and existing development. The following discussion of impacts addresses impacts to scenic vistas directionally, and references the visual simulations (Exhibits 2.3-1 through 2.3-4) where applicable.

Figure 2.3-1: Visual Simulation Key Map





TERRA NOVA®
PLANNING & RESEARCH, INC.

Visual Simulation
Key View 1 from Two Mile Road and Noels Knoll Road
Solar Field Project
Twentynine Palms, California

Exhibit
2.3-1



TERRA NOVA®
PLANNING & RESEARCH, INC.

Visual Simulation
Key View 2 from Two Mile Road and Carodean Road
Solar Field Project
Twentynine Palms, California

Exhibit
2.3-2



TERRA NOVA®
PLANNING & RESEARCH, INC.

Visual Simulation
Key View 3 from Two Mile Road and 400' West of Sunrise Road
Solar Field Project
Twentynine Palms, California

Exhibit
2.3-3



TERRA NOVA®
PLANNING & RESEARCH, INC.

Visual Simulation
Key View 4 from Sunrise Road and Samarkand Drive
Solar Field Project
Twentynine Palms, California

Exhibit
2.3-4

Looking north from Two Mile Road between the Carodean Substation and Easy Street, the scenic vista is blocked by the rising terrain immediately north of Two Mile Road. East of Easy Street, the terrain flattens, and the scenic vista to the north appears. The Solar Project would be visible, but due the distance (about 2,700 feet), the low profile of the solar panels (about 7 feet above grade) and the descending terrain north of Samarkand Drive where the Solar Project would be located, only the top edges of the east portion of the Solar Project would be visible from Two Mile Road between Easy Street and Noel's Knoll Road, as shown in Exhibit 2.3-1. The Solar Project would not impede the northern scenic vista from Two Mile Road. Further east, as shown in Exhibits 2.3-2 and 2.3-3, the Solar Project will not be visible, and the views of the surrounding mountains to the north and northwest will remain unimpeded. Impacts to scenic vistas for viewers looking north would be less than significant.

Westerly scenic vista views from Sunrise Road include volcanic hills and the upper portions of Copper Mountain approximately three miles west of the Project site. Intervening viewshed includes the gently sloping terrain dipping to the north where the Solar Project would occur, thus reducing the cross-sectional view of the solar arrays. Both intervening desert terrain and the hills beyond the array would continue to be visible. The scenic vista of Copper Mountain would not be impeded. See Exhibit 2.3-3.

Further north on Noels Knoll Road (extended) and Sunrise Road at Samarkand Drive, and along Samarkand Drive to the east, views of the Solar Project site would be modified on the desert floor, but as with other views into the site, the distance, ranging from 500 feet at Noels Knoll Road to 1,400 feet at Sunrise Road, and the low profile of the solar panels would result in no obstruction of Copper Mountain and other mountain ridges to the west and northwest. See Exhibit 2.3-4. Impacts for viewers looking west into the site would be less than significant.

Looking south from Amboy Road (extended), the upper slopes of the Cottonwood Mountains in Joshua Tree National Park would remain visible. The Joshua Tree National Park boundary lies 1.4 miles south of Two Mile Road and 1.9± miles south of the Solar Project boundary at Samarkand Drive. The highest peaks in the Park occur directly south of the Solar Project site and are a highly valued scenic vista of Twentynine Palms. The Solar Project site would be visible in the southerly scenic vista from Amboy Road when it is extended, but the distance from a publicly accessible road and the low profile of the arrays both temper the scale of the Solar Project. Impacts to the southerly scenic vista would be less than significant.

As described above, the Solar Project will not block views of the scenic vistas of the surrounding mountains, and impacts will be less than significant.

Residential GPA Impacts

The Residential GPA on the southerly 60 acres of the Project site would increase the maximum allowable density from one (1) single-family house per 5 acres (RL-5) to one (1) unit per 1 acre (RS-1) for the 60 acres at the southwest corner of Samarkand Drive (extended) and Noel's Knoll Road (extended) (see Exhibit 1-5). Development on the balance of the southern half of the Project site would occur at the densities currently allowed under the General Plan: one unit per 5 acres on 59 acres immediately south of Samarkand Drive, and one unit per 2.5 acres on the 117 acres located immediately north of Two Mile Road.

The type and intensity of residential development that would be permitted with the approval of the Residential GPA Project would be comparable to that already occurring in the Project vicinity. Existing surrounding lots within residential subdivisions range from one to five acres with smaller, quarter-acre lots farther southeast. Most residences in the area are one-story, although the proposed RS-1 Zone would allow homes to be up to 35 feet in height. Visibility also depends on location and distance in the sloping surrounding terrain.

Future homes would adhere to the City's development code for development density and intensity, including height restrictions, and conform to local design standards. At the time when a residential project is planned for this site, additional CEQA analysis would be conducted. Generally, due to the distribution of homes and the resultant open space between homes on 1, 2.5 and 5 acre lots, scenic vistas would remain visible both between structures and above them, given the low profile that single story homes would generate.

The proposed Residential GPA would not have a substantial adverse effect on a scenic vista.

c) In non-urbanized 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?

This discussion evaluates the changes in the visual character of the existing landscape in the Project area and is assessed based on visual compatibility of the Project with the existing environment. Elements to be considered include form, line, color and texture. Attributes of the proposed Solar Project and the Residential GPA that are evaluated include dominance, scale, form, color and continuity.

Solar Project Impacts

The Solar Project occurs in a non-urbanized area, and is surrounded by vacant desert lands. The visual character of the Solar Project has been evaluated on this basis. As described above, a key characteristic of the Project site is the natural topography created by sheet flow and the drainage system that starts south of Two Mile Road and fans out across the middle of the Project site. The north-south oriented gullies cross Samarkand Drive and dip down into the wash north of Samarkand Drive where they disappear into the soil. This natural drainage system provides a certain level of vividness to the landscape as it interrupts the uniformity of the creosote scrub covered plain. The natural state of the Project site and surrounding landscape have remained largely intact in this region of Twentynine Palms due to the distance from State Highway 62 and the few paved roads around the Project site. Apart from the electric transmission lines along Two Mile Road and Sunrise Road and Carodean Substation located approximately 0.5 miles west of the Solar Project along Two Mile Road, the Project site and the surrounding landscape to the west present a high level of native high-desert visual unity.

The Solar Project construction phase would involve grading 140 acres to remove vegetation and even out the terrain. A steel bridge would be constructed over the central ephemeral streams. Steel piles driven 7.5 feet into the ground would support racks holding 160,000 solar modules. The modules would stand between six and seven feet high. Security chain link fencing would surround the Solar Project. 10-foot wide unpaved service roads separate the rows of arrays, and 20-foot wide fire access roads are distributed throughout the Solar Project site. Additionally, the pad-mounted transformer would be placed at the south-central edge of the Solar Project.

The solid expanse of dark, uniformly placed solar arrays placed atop graded and compacted soil would starkly contrast with the surrounding landscape of natural contours, light beiges, tans, browns and greens. The Solar Project would not be consistent with any other land uses currently allowed under the General Plan, or with the prevailing visual character in the surrounding vicinity due to its mass, scale, shape, and color. Views of the expansive desert from surrounding public vantage points, particularly from the east side of the site along Noels Knoll Road (extended) and Sunrise Road, and also along Amboy Road (extended) and the planned multi-purpose trail described above would be impacted by the Solar Project because of the large scale and highly contrasting color and form, as shown in Exhibit 2.3-4. From the northern property boundary looking southerly, users of both Amboy Road (extended) and the planned multi-purpose trail would experience a significant change in the native desert, with homes located on lots of 5 acres or more, to the proposed intensity of solar panels occurring in a solid

pattern across more than 100 acres of land. The Solar Project would substantially change the visual character along both Amboy Road and the planned multi-purpose trail. Because the Solar Project proposes a broad expanse of development, there are no mitigation measures available to reduce these impacts. As a result, impacts to the visual character of the area as seen from the northwest, north and northeast will remain significant and unavoidable.

From Noels Knoll Road (extended), immediately adjacent to the Solar Project; and from Sunrise Road, 1,400 feet east of the Solar Project, and from Samarkand Drive (once extended) along the south boundary of the Project, the Solar Project would be in full view and would substantially degrade the existing visual character or quality of public views of the site and its surroundings. A chain link fence along the perimeter would also impede westerly views and degrade the visual character of the landscape. Impacts to views from Noels Knoll Road, Sunrise Road and Samarkand Drive would be significant and unavoidable.

For comparison, nearby residential structures are generally neutral in tone and separated from one another, which diminishes their mass and permits intermittent desert landscape between the structures. The proposed Solar Project would significantly alter the existing visual character of the Project site due to its visual dominance, contrasting form and color, and due to the significant clearing of the vegetation, grading and compacting of the soil.

In order to reduce the severity of these impacts, mitigation measures AES-1 and AES-2 have been developed, which would allow for the restoration of the native plant environment surrounding the solar panels to the extent possible. However, given the broad expanse of land whose scenic character will be impacted, and its location surrounding the panels, and that the Solar Project would still be visible after replanting of native vegetation, impacts would remain significant and unavoidable due to the mass, scale, and form of the Solar Project.

Residential General Plan Amendment Impacts

The Project site where the proposed Residential General Plan Amendment (Residential GPA) applies is currently undeveloped desert land. The Residential GPA would increase the density of single-family housing from 1 unit per 5 acres (RL-5) to 1 unit per 1 acre (RS-1) on the 60 acres located at the southwest corner of Samarkand Drive (extended) and Noels Knoll Road (extended). The Solar Project would occur immediately north of the Residential GPA on the north side of Samarkand Drive.

The nearest affected viewers would be travelers on Two Mile Road and Easy Street to the south, Sunrise Road and the future Noels Knoll Road to the east, single-family residences south of Two Mile Road and east of Sunrise Road, and along

Samarkand Drive (extended). While additional residential structures on this land would alter the existing visual character of public views, the Residential GPA would conform with similar RS-1 land uses occurring within 0.25 miles of the Project site and would not introduce a contrasting visual impediment to the area.

Again, the visual character and aesthetic value of the Project site itself would be impacted by the construction of new residences. To help offset visual impacts, future homes would adhere to the City's Development Code for height restrictions, design, and energy efficiency standards. Furthermore, the clustering of residences into this higher density would benefit the City and the surrounding landscape by both retaining enough area for future housing needs yet containing the aesthetic impacts of future housing to a smaller footprint.

The City's Housing Element policy 2.7 states the City must:

"Provide adequate sites for the development of new housing through appropriate land use and zoning designations to accommodate the City's share of regional housing needs."

At the same time, the City's Land Use Element policy 7.5 seeks to:

"Allow clustering of residential development in sensitive areas of the City to protect and preserve the area's natural resources for future generations."

The impacts of the proposed Residential GPA to the visual character of the Project site would be less than significant with the imposition of the City's standards and requirements.

d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

Solar Project Impacts

The expanse of photovoltaic panels associated with the Solar Project has the potential to generate bright reflections of the sun that could hinder aircraft navigation associated with operations at the MCAGCC airfield and the Twentynine Palms Airport. Glare intensity was modeled and analyzed using the Federal Aviation Administration's (FAA) Technical Guidance for Evaluating Selected Solar Technologies on Airports.[2] The Analysis is provided in its entirety in Appendix B.

[2] Op. cit. Dudek 2024. The glare analysis also relied on the Forge Solar 3D geometric glare analysis software tool.

The glare report uses color to code the intensity of glare with "green" glare having a low potential to generate an after-image on the viewer's retina. Glare with the potential to generate an after-image and thereby adversely affect a pilot's vision is referred to as "yellow" glare and the most intense reflection, labeled a "red" glare, can cause eye damage.

The glare analysis prepared for the Solar Project analyzed six airport approach receptors at the six airport runway approaches (three runways): one runway with two approaches is located at the MCAGCC Airport located 8.8± mile north of the Project site and two runways with four approaches are located at the Twentynine Palms Airport 8.9± miles east-southeast of the Project site. The glare analysis indicates that of the six runway approaches analyzed, only runway 8/26 at the Twentynine Palms Airport would be impacted by a green glare, which would be received upon approach in the late afternoon hours during April, August, and September for 20 minutes per day from the Solar Project. Green glare has a low potential to cause an afterimage and the green glare from the Solar Project is not expected to affect operations at the Twentynine Palms Airport.

In addition to the airport impacts, twenty dwelling point receptors were analyzed. Five were predicted to receive green and yellow glare from the Solar Project from 5 to 40 minutes per day during the spring and summer months late in the afternoon as the sun sets over the Project site. The overall ocular impact would be less than that of a smooth body of water, and significantly less than that of viewing unfiltered sunlight.

The solar panel surfaces will be tempered glass with anti-reflective coating to reduce glare. The coating, in combination with the limited impact on airport and residential viewer glare, result in less than significant impacts relating to daytime glare from the Solar Project.

The Project site would not have any on-site lighting. There would be no impacts from lighting at the Project site. No lighting is proposed to be installed on the Solar Project site. Impacts from light and glare would be less than significant.

Residential GPA Project Lighting Impacts

The proposed Residential GPA will not, in and of itself create any new sources of light or glare. Subsequent proposals to subdivide and develop these lands will be subject to City development standards and regulations and to comprehensive CEQA review. At that time, any potential light and/or glare impacts associated with residential development will be evaluated and, if necessary, mitigated.

However, outdoor lighting for all residential structures must adhere to the Twentynine Palms Municipal Code for Lighting Development Standards, Section 19.78.050. The City permits outdoor lighting that promotes safety and utility but also minimizes disturbances to the nighttime visual environment and protects the aesthetic value of the night sky. The City's lighting standards provide clear guidance on permissible height and styles of outdoor lights to properly shield non-targeted neighboring features from glare. Future residences on the Project site would adhere to the Development Code and would not create significant new sources of substantial light or glare that would adversely affect nighttime aesthetic resources. The impact from lighting on future residences would be less than significant.

2.3.7 Mitigation Measures

Solar Project Mitigation Measures

AES-1 Within 60 days of the completion of construction, or at the earliest possible time that is appropriate to achieve plant establishment, as determined by the City and a qualified Project biologist, native plants shall be installed on the Solar Project site as further described in the Habitat Restoration Plan included as Appendix D.3.

AES-2 Prior to the completion of construction, plant native vegetation along the east and south sides of the perimeter security fence to shield the Solar Project site from potential future residential viewers. Irrigation would be required to assist initial plant growth.

2.3.8 Significance After Mitigation

As described above, impacts associated with scenic vistas and light and glare will be less than significant, and do not require mitigation. Impacts associated with the changes caused by the Solar Project to the visual character of this area, however, will be significant, and, even with feasible mitigation, will result in significant and unavoidable impacts.

2.3.9 Cumulative Impacts

Solar Project Cumulative Impacts

Cumulative impacts include the impacts of this proposed Solar Project as well as the impacts of other similar projects in the nearby vicinity. Currently, there are three other comparably sized solar farms in the region on unincorporated County lands: the 150-acre Cascade Solar Farm in Joshua Tree, the 120-acre SEPV2 and

SEPV8 Solar Farm on Lear Avenue, and the 80-acre SEPV9 on Indian Trail[3]. Together, the four solar fields would significantly impact a total of 350 acres. No additional solar projects are currently proposed in the surrounding area.

Cumulative impacts associated with scenic vistas from additional potential projects would, as with the proposed Solar Project, be less than significant, insofar as the height and scope of such projects would need to meet the criteria and standards provided in the City's proposed renewable energy ordinance and would be unlikely to significantly block surrounding mountain views. Impacts associated with scenic vistas would also likely be less cumulatively significant.

While the Project does not propose to change the land use designation for any site other than the Project site, the City's creation of a new Energy zone could conceivably increase the potential for similar future solar projects within Twentynine Palms, insofar as other projects could request re-zoning to this new use. It is possible that some of those projects could be located in undeveloped rural areas of the City. Any such proposals would require a discretionary zone change and would need to meet the standards provided within the City's proposed Energy zone. The impacts associated with any additional requests for the use of the Energy designation and zone would be assessed on a case-by-case basis as each of these projects was proposed. However, depending on the location of future projects, if any, their impacts to visual character could be significant and unavoidable, and when added to the impacts of the Solar Project, could be cumulatively significant.

When considering the existing solar fields within the sphere of influence and the region, the number of acres that would be affected with the addition of this Solar Project, and the potential impacts of additional solar projects which could be allowed by the creation of the new Energy General Plan and Zoning designation, the cumulative impacts to the visual character and aesthetic resources of this rural high desert section of Twentynine Palms are considered significant and unavoidable.

Cumulative light and glare impacts generated by additional solar projects would be similar to those identified for the Solar Project, and be dependent on the location of each project. Compliance with the City's proposed renewable energy ordinance, which requires that any proposed solar project not impact MCAGCC operations, and compliance with Federal Aviation Administration requirements for light and glare from solar projects, would ensure that future solar projects do not contribute to glare impacts at MCAGCC or the Airport. Lighting

[3] County of San Bernardino, Land Use Services/Planning Division Renewable Energy Projects as of February 1, 2025

impacts would also not be cumulatively significant, because additional solar projects would not be expected to provide lighting.

Residential GPA Cumulative Impacts

The cumulative impacts associated with the Residential GPA would be limited, insofar as no other lands within the City are proposed for increases in density, and residentially designated lands will be required to meet the same Development Code lighting standards as those required for projects within the Residential GPA. These standards limit residential outdoor lighting, and provide for shielding to limit off-site impacts. When considered across all residential lands in the City, cumulative impacts would be expected to be less than significant.

2.4 Air Quality

2.4.1 Introduction

The following section describes existing air quality in the Mojave Desert Air Basin and analyzes the potential impacts associated with the construction and operation of the proposed Project. Various local and regional data sources, ranging from research and analyses conducted for the Project site to regional-scale planning and environmental documents, have been used in analyzing the project and its potential effects on air quality. Analysis of Project emissions, as well as background information discussed in this section are based on the Air Quality and Greenhouse Gas Report prepared for the Project (Appendix C).

2.4.2 Thresholds of Significance

The project would have a significant effect to air quality if the Proposed Project would:

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?

The Initial Study determined that the Project would result in "No Impact' for threshold question d). Therefore, it is not analyzed further in this EIR.

2.4.3 Regulatory Framework

Federal

Federal Clean Air Act (FCAA) – 42 U.S.C §7401 et seq.
The Federal Clean Air Act was first enacted in 1970 and most recently amended in 1990 and stands as the federal government's primary air quality law regulating air emissions from both stationary and mobile pollution sources. FCAA amendments have created several regulatory programs targeting specific pollution sources including National Ambient Air Quality Standards (NAAQS),

National Emissions Standards for Hazardous Air Pollutants (NESHAPs), New Source Performance Standards (NSPS), the Acid Rain Program (ARP), and the Clean Air Act Stratospheric Ozone Protection program. The FCAA give the Environmental Protection Agency (EPA) the authority to research and establish emissions standards for all fifty states.

National Ambient Air Quality Standards (NAAQS)

The FCAA authorizes the EPA to set National Ambient Air Quality Standards for six criteria pollutants which are potentially harmful to the public and to the environment. Ambient air quality standards set emissions thresholds that are designed to protect human health and environmental factors. An ambient air quality standard stipulates the maximum amount of a pollutant that can be present in the air during a specific timeframe and not cause harmful effects on the most sensitive members of the community and natural resources. Every five years, the EPA reviews the NAAQS and revises the standards as needed. The six criteria pollutants regulated by the NAAQS are: carbon monoxide (CO), oxides of nitrogen (NO_x), oxides of sulfur (SO_x), particulate matter (PM_{10} and $PM_{2.5}$), lead (Pb), and tropospheric ozone (O_3).

If a pollutant's concentration in the air is at or below the threshold, then the area is said to be in attainment. A nonattainment area, a region where a pollutant level is higher than the NAAQS threshold, must prepare a State Implementation Plan (SIP) detailing actions to be taken to reduce the pollutant level and meet the NAAQS by an applicable attainable deadline.

State

California Air Resources Board (CARB)

The implementation and enforcement of the Federal Clean Air Act is delegated to the states. In California, the California Air Resources Board (CARB) is the agency tasked with managing and regulating air quality along with subsidiary responsibilities delegated to regional air quality management districts throughout the state. CARB is responsible for carrying out the California Clean Air Act which includes managing the SIPs, approving regional district air quality plans, and governing the state's reduction of greenhouse gases.

Established in 1967, CARB became part of the California Environmental Protection Agency in 1991.

California Clean Air Act

In 1988 the California Clean Air Act was enacted and established statewide ambient air quality standards which continue to exceed the NAAQS and accelerate attainments for nonattainment areas. The California Ambient Air

Quality Standards (CAAQS) includes four additional criteria pollutants: sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. Descriptions of the criteria pollutants for the NAAQS and CAAQS follow. Further down, Table 2.4-1 provides national and state criteria pollutant thresholds.

Criteria Pollutants

Federal and state air quality standards established for specific pollutants, which are called "criteria pollutants," are designed to protect the general population and especially the segment of the population who are most susceptible to respiratory distress or infection, including the elderly, children, asthmatics, or those who are compromised by disease or illness. Criteria pollutants, their typical sources, and resulting health effects are as follows:

Carbon Monoxide (CO) is a colorless and odorless gas emitted from the incomplete combustion of all fossil fuels including oil, coal, and natural gas. It interrupts the delivery of oxygen to the brain and can cause dizziness, headaches, and nausea.

Oxides of Nitrogen (NO_x) and Nitrogen Dioxide (NO_2) is a yellow-brown colored gas that forms when nitric oxide, emitted primarily from burning of petroleum gas, combines with atmospheric oxygen. This causes lung damage and breathing difficulties.

Sulfur Dioxide (SO_2) is a colorless and pungent gas emitted from coal and oil power plants, refineries, and diesel engines. It can irritate eyes, nose, and airways and cause shortness of breath.

Particulate Matter (PM_{10} and $PM_{2.5}$) refers to suspended air particles with a width of 10 microns down to 2.5 microns. These very small particles may occur as liquid or solid, and when they are inhaled, they cause damage to the respiratory system and aggravate respiratory illnesses.

Lead (Pb) is emitted from metals processing facilities, combustion of leaded fuel, and manufacturing of lead-acid batteries. Lead can damage the nervous system, kidneys, and interfere with developmental and reproductive systems.

Ozone (O_3) is a secondary pollutant that forms in the atmosphere when nitrogen oxides and other reactive gases react with ultraviolet sunlight. Ozone can damage the respiratory system and aggravate existing respiratory illnesses and it also damages vegetation.

Sulfates are a family of chemicals containing a fully oxidized ionic form of sulfur. Most sulfates form in the atmosphere from sulfur dioxide. Sulfates contribute to acid rain. The small sulfate particles also have similar health effects as fine particulate matter.

Hydrogen Sulfide (H_2S) is the rotten egg smelling gas emitted from petroleum and natural gas production, natural emissions from geothermal fields, and sewer systems. It can cause skin and respiratory damage, tearing of the eyes, and lead to headaches and nausea.

Vinyl Chloride is a colorless gas with a mild, sweet smell. Vinyl chloride is used in the production of polyvinyl chloride (PVC) and other vinyl products. Long-term occupational exposure is the most concerning risk.

Visibility Reducing Particles are the particulate matter in the atmosphere that impair visibility. The California standard for visibility impairment is unique in that it does not pertain to health, but instead concerns impacts to the environment (plants, forests, ecosystems) and economic consequences that stem from reduced visibility in parks and wilderness areas.

A Supreme Court of California decision, Sierra Club v. County of Fresno (Friant Ranch), states that EIRs should relate a project's expected significant adverse air quality impacts to likely human health consequences or explain why it is not feasible at the time of preparing the EIR to provide such an analysis. Project-related health impacts are discussed in Section 2.4.6.c.

Table 2.4-1
State and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards	
		Concentrations[1]	Primary	Secondary
Ozone (O_3)	1 Hour	0.09 ppm	--	--
	8 Hour	0.070 ppm	0.070 ppm (137 µg/m³)	
Particulate Matter (PM_{10})	24 Hour	50 µg/m³	150 µg/m³	
	AAM[2]	20 µg/m³	--	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	--	35 µg/m³	
	AAM	12 µg/m³	9 µg/m³	15 µg/m³
Carbon Monoxide (CO)	1 Hour	20 ppm	35 ppm	--
	8 Hour	9 ppm	9 ppm	--
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm	100 ppb	--
	AAM	0.030 ppm	53 ppb	
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm	75 ppb	--
	3 Hour	--	--	0.5 ppm
	24 Hour	0.04 ppm	0.14 ppm	--
	AAM	--	0.030 ppm	--
Lead (Pb)	30 Day Average	1.5 µg/m³	--	--
	Calendar Quarter	--	1.5 µg/m³	
	Rolling 3-Month Average	--	0.15 µg/m³	
Visibility Reducing Particles	8 Hour	--	No National Standards	
Sulfates	24 Hour	25 µg/m³		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m³)		

[1] µg/m³ = micrograms per cubic meter of air
[2] AAM = Annual Arithmetic Mean
Source: Table of Ambient Air Quality Standards, California Air Resources Board, https://ww2.arb.ca.gov/sites/default/files/2024-08/AAQS%20Table_ADA_FINAL_07222024.pdf, accessed October 8, 2025.

Toxic Air Contaminants (TACs)

The California Health and Safety Code §39655 defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." Assembly Bill 1807, the Tanner Air Toxics Act of 1983, and the Air Toxics Hot Spots Information and Assessment Act of 1987 provide the procedures for CARB to identify and regulate TACs.

The Mojave Desert Air Quality Management District (MDAQMD) is the local implementing and enforcing agency for the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (commonly known as AB 2588), which established a statewide program for the inventory of air toxics emissions from specifically identified individual facilities as well as requirements for risk assessment and public notification of potential health risks. Facilities likely to be high emitters of Toxic Air Contaminants (TACs) under the MDAQMD's AB 2588 program include a range of industrial and operational categories. These encompass industrial manufacturing plants like chemical and metal processing facilities emitting benzene or hexavalent chromium, combustion-related sources such as power plants and incinerators releasing dioxins and formaldehyde, oil refineries and fuel storage sites producing BTEX compounds, waste management operations like landfills emitting vinyl chloride, agricultural facilities handling pesticides, transportation hubs such as ports and railyards with high emissions of diesel particulate matter (DPM), and specialized operations like dry cleaners using perchloroethylene. Designation as a high emitter depends on exceeding CARB thresholds and MDAQMD prioritization based on emission levels, toxicity, and proximity to populations.

California Health and Safety Code Section 41700

This code is also referred to as the Nuisance Complaint Program and states that with exceptions provided in Section 41705, a person "shall not discharge from any source quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public." The Code further includes that a person shall not discharge any air contaminants that endangers the comfort, repose, health, or safety of any people or the public, or causes injury or damage to business and property.

State Implementation Plans (SIPs)

Per federal clean air legislation, states are required to develop plans that detail how nonattainment areas with criteria pollution levels higher than the federal thresholds will reduce the emissions to bring the areas into attainment. Once a nonattainment area conforms to the pollutant threshold, the standard must be monitored and maintained for a particular timeframe. SIPs explain the modeling, monitoring, and permitting processes, as well as local air quality district rules and

state regulations. Local air quality districts contribute elements and submit them to CARB. CARB is the lead agency responsible for assembling the SIPs and submitting them to the EPA.

Table 2.4-2 shows the West Mojave Desert's attainment status for the criteria air pollutants as designated by the EPA. The Western Mojave Desert, which includes the MDAB, is designated as being in severe nonattainment for regional levels of ozone (O_3) and moderate nonattainment for particulate matter (PM_{10}). Federal standards for carbon monoxide, nitrogen dioxides, sulfur dioxide, $PM_{2.5}$ and lead are not exceeded.

Table 2.4-2
Regional Attainment Status – West Mojave Desert

Criteria Pollutant	Attainment Status
Ozone (O_3) 8-Hour	Nonattainment (severe)
Carbon Monoxide (CO)	Attainment
Fine Particulate Matter ($PM_{2.5}$)	Attainment
Particulate Matter (PM_{10})	Nonattainment (moderate)
Nitrogen Dioxide (NO_2)	Attainment
Lead (Pb)	Attainment
Sulfur Dioxide (SO_2)	Attainment
Source: EPA Green Book (Updated September 2025)	

Designations of regional nonattainment for ozone, PM_{10}, and $PM_{2.5}$ within the MDAB prompted the adoption of the following plans.[1]

- Mojave Desert AQMD 1995 Mojave Desert Planning Area Federal PM_{10} Attainment Plan
- 2007 Western Mojave Desert Ozone Attainment Plan
- MDAQMD Western Mojave Desert Non-attainment Area Ozone Attainment Plan 2008
- 2015 8-Hour Ozone Reasonably Available Control Technology (RACT) SIP Analysis: Mojave Desert Air Quality Management District
- 2016 8-Hour ozone SIP: Western Mojave Desert Nonattainment Area
- 2022 8-Hour Ozone SIP: Western Mojave Desert Nonattainment Area

[1] Western Mojave Desert Air Quality Plans prepared by California Air Resources Board, https://ww2.arb.ca.gov/our-work/programs/california-state-implementation-plans/nonattainment-area-plans/western-mojave, accessed October 2025.

Regional and Local

Mojave Desert Air Quality Management District (MDAQMD)

The state of California is divided into fifteen air basins, each defined by local topography, climate, and regional air quality issues. The City of Twentynine Palms occurs within the Mojave Desert Air Basin (MDAB), a large geographic region encompassing the high desert of San Bernardino County, portions of eastern Kern County, northeastern Los Angeles County, and the Palo Verde Valley of eastern Riverside County. The MDAQMD regulates stationary sources of air pollution within its jurisdiction, which covers 20,000 square miles including the High Desert in San Bernardino County and Palo Verde Valley in Riverside County. The District covers a large portion of the Mojave Desert Air Basin, which also overlaps with parts of the Eastern Kern Air Pollution Control District, the Antelope Valley AQMD, and the South Coast AQMD.

The MDAQMD has established thresholds for certain criteria pollutants and monitors daily pollutant levels and meteorological conditions throughout the District. Based on the District's emissions thresholds for criteria pollutants, any project would be considered to have significant impacts to air quality if the daily emissions exceed the values shown in the table below during construction or operation.

Table 2.4-3
MDAQMD Significant Emissions Thresholds

Criteria Pollutant	Annual Thresholds (short tons)	Daily Thresholds (pounds)
Reactive Organic Gases (ROG, VOC)	25	137
Oxides of Nitrogen (NO_x)	25	137
Carbon Monoxide (CO)	100	548
Oxides of Sulfur (SO_x)	25	137
Particulate Matter (PM_{10})	15	82
Particulate Matter ($PM_{2.5}$)	12	65
Hydrogen Sulfide (H_2S)	10	54
Lead (Pb)	0.6	3
Greenhouse Gases (CO_2e)	100,000[1]	548,000

1. MDAQMD sets the threshold at 100,000 short tons which converts to 90,718.474 metric tons. CalEEMod emission outputs provide annual GHG emissions in metric tons.
Source: MDAQMD CEQA Guidelines (February 2020)

The city of Twentynine Palms is subject to the MDAQMD Rule Book which provides policies and measures to guide the District in meeting federal and state air quality standards. Specific rules that apply to the Solar Project are listed here.

Regulation II – Permits

Rule 201 Permits to Construct: A Person shall not build, erect, install, alter or replace any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce or control the issuance of air contaminants without first obtaining written authorization for such construction from the Air Pollution Control Officer. A permit to construct shall remain in effect until the permit to operate the equipment for the which the application was filed in granted or denied, or the application is canceled.

Regulation III – Fees

Rule 302 – Other Fees: This rule sets forth fees which may be charged for various activities, documents and services, including but not limited to, provision of publication, performing analysis, filing, evaluation and enforcement of plant and State Mandated Fees. Requires fees for consideration and approval of a Solar Dust Control Plan.

Regulation IV – Prohibitions

Rule 401 Visible Emissions: A Person shall not discharge into the Atmosphere from any emission source whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour, which is as observed using the appropriate test method referenced in Section E:

(a) As dark or darker in shade as that designated at No. 1 on the Ringelmann Chart; or
(b) Of such Opacity as to obscure an Observer's view to a degree equal to or greater than 20% Opacity.

Equipment-Specific Visible Emission Limitations

Pile Drivers – Notwithstanding the requirement of Section (C)(1), Visible Emissions from pile driver operations shall not exceed Ringlemann 1 (or equivalent 20% Opacity) for no more than 4 minutes per pile, or Ringlemann 2 (or equivalent 40% Opacity) for no more than 4 minutes per pile if operating on kerosene, smoke suppressing additive and synthetic lubricating oil.

Rule 402 Nuisance: A person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of person or to the public, or that endanger the comfort, repose, health, or safety of any of those persons or the public or that cause, or have a natural tendency to cause, injury or damage to business or property.

Rule 403 Fugitive Dust Control: The purpose of this rule is to reduce the amount of PM_{10} entrained in the ambient air from anthropogenic Fugitive Dust sources within the District by requiring actions to prevent, reduce, or mitigate Fugitive Dust. Rule 403 includes requirements for a Dust Control Plan, signage and fencing, as well as surface watering and stabilization with chemicals, gravel and asphaltic pavement to eliminate visible fugitive dust from vehicular travel and wind erosion.

Rule 404 Particulate Matter Concentration: A person shall not discharge into the atmosphere from any source, particulate matter except liquid sulfur compounds, in excess of the concentration at standard conditions, shown in Table 404(a). Where the volume discharged is between figures listed in the table, the exact concentration permitted to be discharged shall be determined by linear interpolation.

Regulation XI – Source Specific Standards

Rule 1103 Cutback and Emulsified Asphalt: To reduce emissions of volatile organic compounds (VOC) from the use of cutback and emulsified asphalts. The provisions of this rule apply to the manufacture, mixing, storage, use, and application of cutback and emulsified asphalts.

Rule 1113 Architectural Coatings: The purpose of this rule is to limit the quantity of Volatile Organic Compounds (VOC) in Architectural Coatings. Except as provided in subsection (A)(3), this Rule is applicable to any person who supplies, sells, offers for sale, manufactures, blends or repackages any Architectural Coating for use within the Mojave Desert Air Quality Management District as well as any person who applies or Solicits the application of any Architectural Coating within the District.

City of Twentynine Palms General Plan 2012

Land use, air quality and climate change goals of policies that govern new development and redevelopment throughout the City are prescribed in the City's 2012 General Plan.

Goal LU-7 Protect and preserve Twentynine Palms natural resources, promote the existing quality of life and prepare for future residents and businesses by promoting superior sustainable development.

Policy LU-7.2 Development shall be sustainable in its use of land and shall limit impacts to natural resources, energy, and air and water quality.

Goal CO-4 Develop regulations and policies which reduce pollutants responsible for lowering the air quality within the City and for adding to the global climate change problem.

Policy CO-4.1 Require air quality analyses for all proposed development projects that have the potential to adversely affect air quality and identify and impose mitigation measures within their design. Projects shall be determined to have the potential to adversely affect air quality based on the significance thresholds established by the MDAQMD CEQA Guidelines.

Policy CO-4.2 Coordinate with the MDAQMD and the Southern California Association of Governments (SCAG) to implement the MDAQMD's rules to meet Federal and State air quality standards for all pollutants.

Policy CO-4.3 Develop regulations and procedures to comply with Federal attainment plans, adopted by the Mojave Desert Air Quality Management District, for Ozone and PM_{10}.

Policy CO-4.6 Require developers to phase and stage construction activities to reduce construction-related pollutant emission levels to the lowest level practical.

Policy CO-4.7 Require developers to use water trucks and temporary irrigation systems, as well as other feasible measures, to limit fugitive dust emissions resulting from their activities in accordance with MDAQMD Rule 403.

City of Twentynine Palms Code of Ordinances

Chapter 19.64 Hillside Grading, Clearing and Plant Removal
In addition to hillside regulations, this code includes regulations to preserve and protect desert plants and regulates the clearing of native vegetation for the purposes of minimizing wind and water erosion; providing appropriate storm drainage containment and control; minimizing disturbance to fragile desert ecosystems; reducing the amount of fugitive dust and protecting natural hillside formation during grading and development.

2.4.4 Environmental Setting

The City of Twentynine Palms is located within the south-central portion of the Mojave Desert adjacent to the northeast boundary of Joshua Tree National Park. Of the four desert ecosystems in North America, the Mojave Desert is the most arid receiving an average of five inches of rain annually. Much of the rainfall occurs in the winter and spring with a few intense monsoonal showers occurring in July and August. Temperatures in the Mojave Desert are extreme due to elevational changes within the Desert. In the summer, temperatures can regularly exceed 100 degrees Fahrenheit and reach below freezing during the winter months. Both the lowest elevation of -280 feet and the highest elevation of 11,000 feet occur in Death Valley National Park. The Project site in Twentynine Palms sits at approximately 2,200 feet and faces the highest peaks in Joshua Tree National Park which are just above 5,600 feet.

2.4.5 Existing Conditions

Air quality in the MDAB is impacted not just by emissions sources within the basin, but also by activity in the broader region. Fine particulate matter and ozone, two of the pollutants that have the greatest potential public health impacts, are emitted by fuel and wood combustion. When fossil fuels are burned, not only are fine particulates released, but also photochemical reactions with the nitrogen oxides lead to the presence of ozone.[2] Within MDAQMD jurisdiction, on-road transportation emits 40 percent of all nitrogen oxides, and other mobile sources such as trains emit 32 percent of all nitrogen oxides.[3] The main highways in the MDAQMD—Interstate 15, Interstate 40, State Route 58, and U.S. Route 395—handle heavy truck traffic, with Interstate 15 also serving as a key route for commuters heading into the Los Angeles Basin, which decreases air quality in the MBAD.[4]

Air Quality Monitoring

Air quality is measured at monitoring stations operated by the air quality management district. The MDAQMD operates seven air monitoring stations distributed across its jurisdiction in Trona, Barstow, Hesperia, Victorville, Lucerne Valley, and Yucca Valley (Joshua Tree National Monument). The nearest station to monitor ozone is the Joshua Tree National Monument station, and the nearest station to monitor PM_{10} is the Lucerne Valley station. The Joshua Tree National

2 California Air Resources Board, Sources of Air Pollution, https://ww2.arb.ca.gov/resources/sources-air-pollution, accessed October 2025.
3 MDAQMD, Pollution Sources, https://www.mdaqmd.ca.gov/air-quality/pollution-sources, accessed October 2025.
4 MDAQMD, Federal 8-hour Ozone Attainment Plan, Western Mojave Desert Non-attainment Area, Adopted June 2008, accessed October 2025.

Monument station is located 16.95 miles west/southwest from the Project site, and the Lucerne Valley station is located 51.5 miles northwest from the Project site. The following Tables, 2.4-4 and 2.4-5, provide the maximum concentration values for ozone and particulate matter (PM_{10}) and the number of days the pollution thresholds were exceeded annually over a seven-year period at these locations.

For Table 2.4-4, ambient air quality measurements were recorded by the Joshua Tree National Monument Monitoring Station located in the Black Rock Campground south of the Town of Yucca Valley from 2018 and 2024. Maximum concentration of ozone fluctuates between 2018 and 2020 but then shows a downward trend between 2021 and 2024. The number of days when ozone levels exceeded standards also fluctuates between 2018 and 2021, yet there is clear trend indicating improved ozone concentrations. Since 1989, when the region was first designated as non-attainment for ozone, an overall decline in 8-Hour ozone concentration has been documented at seven of the eight monitoring stations.[5]

Table 2.4-4
Ozone Monitoring Data

Monitoring Station	Year	Maximum Concentration		Number of Days Standard Exceeded		
				Federal	State	
		1 Hour ppm[1]	8 Hour ppm[2]	8 Hour[3]	1 Hour	8 Hour
Joshua Tree – National Monument	2018	0.110	0.095	65	11	71
	2019	0.105	0.088	39	2	40
	2020	0.111	0.099	34	4	39
	2021	0.106	0.093	37	3	42
	2022	0.099	0.083	37	2	39
	2023	0.096	0.084	24	1	29
	2024	0.096	0.085	32	3	35

Source: iAdam: Air Quality Data Statistics, California Air Resources Board; www.arb.ca.gov/adam. Accessed October 2025.
[1] 1-Hour Ozone Average State Standard Maximum is 0.10ppm. No National 1-Hour Standard available.
[2] 8-Hour Ozone Average National Standard Maximum is 0.070 ppm
[3] Days Exceeding National 8-Hour 0.070 ppm Standard.

Table 2.4-5 shows the concentration PM_{10} as provided by the MDQAMD Lucerne Valley Air Monitoring Station. The data indicate fluctuations in PM_{10} concentrations over a seven-year period. Insufficient data was collected for the

[5] "Federal 8-Hour Ozone Design Value Trend (Figure 1)," MDAQMD Federal 70ppb Ozone Attainment Plan (Western Mojave Desert Nonattainment Area, Adopted January 23, 2023, accessed October 2025.

maximum concentration and number of days exceeding the state standard. In general, exceedance values for 2022 through 2024 are lower than previous years. Note that the Lucerne Valley monitoring station is upwind of the Project site and cannot monitor air quality downwind of the Project site.

Table 2.4-5
Particulate Matter 10 Monitoring Data

Monitoring Station	Year	Maximum Concentration (µg/m³/24 hours)		Number of Days Maximum Reached		Annual Arithmetic Mean[2]
		Federal	State[1]	Federal	State	
Lucerne Valley Station	2018	123.6	*	0	*	19.7
	2019	166.3	*	1	*	17.0
	2020	203.1	*	1	*	23.4
	2021	411.9	*	1	*	23.5
	2022	60.2	*	*	*	21.4
	2023	112.0	*	0	*	19.2
	2024	105.0	*	0	*	20.9

Source: iAdam: Air Quality Data Statistics, California Air Resources Board; www.arb.ca.gov/adam. Accessed October 2025.
[1] * = There was insufficient (or no) data available to determine the value.
[2] Federal Annual Average Standard AAM number of days exceeding the 50 µg/m³

Solar Project Impacts

The proposed 50-megawatt (MW) photovoltaic Solar Project will occupy 184 acres of the 241 acres north of Samarkand Drive within the 477-acre overall Project site. On the Solar Project site, 131.6 acres will be disturbed, and off-site approximately 9 acres will be disturbed to construct the access road between Two Mile Road and the Solar Project, and 1.6 acres will be disturbed along Two Mile Road to install the utility extension to the Carodean Substation. The 160,000 photovoltaic solar modules would be supported by 720 ground-mounted racks, and each rack will measure 120 feet in length and range from three to seven feet in height. Support piles will be set seven feet deep below the surface. Service and maintenance access will be via 10-foot-wide corridors between the rows. The tops of the modules will extend 7' above surrounding grade with a 21-degree south-facing angle. The solar modules will be interconnected by above-ground cables which will be aggregated and fed into underground cabling and then connected to an on-site pad-mounted transformer located at the central southern edge of the Solar Project site on Samarkand Drive. From the transformer, an underground interconnection line would transport the power one-half mile south along the access driveway to Two Mile Road, and then one-half mile west to the Southern California Edison Carodean Substation, which sits on the southeast corner of Two Mile Road and Canyon Road.

Sensitive receptors are more susceptible to the effects of air pollution than the general population. The closest sensitive receptors to the Solar Project site are residences located approximately 1,400 feet east of the Solar Project on the east side of Sunrise Road and north of Samarkand Drive and residences located immediately south of Two Mile Road between Sunrise Road and Easy Street. There are no non-residential sensitive receptors within the vicinity of the Project site.

Residential GPA Impacts

The Project does not propose the construction of single-family homes on the new RS-1 designation (60 acres) south of the Solar Project at this time. Although the proposed GPA would redistribute residential density by concentrating it on the southern half of the site rather than the northern half, the overall Project would maintain the site's existing development capacity of 119 residences and would not introduce any new air quality impacts beyond those already evaluated in the City's 2012 General Plan. Nevertheless, criteria pollutant emissions from build out of the 119 residences is provided for analysis purposes.

2.4.6 Project Impacts

a) Conflict with or obstruct implementation of the applicable air quality plan?

The Project is located within the MDAB, which is governed by the MDAQMD. MDAQMD is responsible for monitoring criteria air pollutant concentrations and establishing management policies for the MDAB. All development within the MDAB, including the proposed Project, is subject to all applicable air quality management plans that establish control strategies and guidance on regional emission reductions for air pollutants, including but not limited to ozone attainment plans and PM_{10} reduction plans. Applicable air quality management plans are as follows:

- Mojave Desert AQMD 1995 Mojave Desert Planning Area Federal PM_{10} Attainment Plan
- 2007 Western Mojave Desert Ozone Attainment Plan
- MDAQMD Western Mojave Desert Non-attainment Area Ozone Attainment Plan 2008
- 2015 8-Hour Ozone Reasonably Available Control Technology (RACT) SIP Analysis: Mojave Desert Air Quality Management District
- 2016 8-Hour ozone SIP: Western Mojave Desert Nonattainment Area
- 2022 8-Hour Ozone SIP: Western Mojave Desert Nonattainment Area

According to the MDAQMD CEQA Guidelines, a project is considered non-conforming if it conflicts with or delays the implementation of any applicable attainment or maintenance plan. According to the guidelines, a project is considered conforming if it "complies with all proposed control measures that are not yet adopted from the applicable plan(s) and is consistent with the growth forecasts in the applicable plan(s)."

The MDAQMD works directly with the Southern California Association of Governments (SCAG), county transportation commissions, and local governments, and cooperates actively with all state and federal government agencies. SCAG adopted the 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (also referred to as Connect SoCal 2024) to comply with metropolitan planning organization (MPO) requirements under the Sustainable Communities and Climate Protection Act. Chapter 3 of the Connect SoCal 2024 plan forms the basis of land use and transportation controls of air quality plans. SCAG forecasts the City of Twentynine Palms will have 11,700 households by 2050[6] and a population of 33,300 by 2045.[7] According to the 2012 General Plan, the City has the potential to accommodate a total of 27,940 dwelling units and a population of 103,275 through General Plan buildout.[8]

The MDAQMD CEQA Guidelines also state that a project is considered conforming if it complies with all proposed control measures. According to the City's General Plan 2012, the City is subject to the provisions of the MDAQMD Rule Book, which establishes policies and other measures designed to help the District reach federal and state attainment standards.[9] In accordance with the City's policies, the proposed Project shall comply with the provisions of the MDAQMD Rule Book. These actions include, but are not limited to, the implementation of fugitive dust control measures (Rule 403) and Rule 201, which requires a permit from the Air Pollution Control Office prior to any construction activities.

Solar Project Impacts

The Solar Project's construction will adhere to all relevant control measures imposed by the MDAQMD and the City. As shown in Tables 2.4-8 and 2.4-9, the Solar Project's construction emissions would not exceed daily or annual MDAQMD

6 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Final Growth Forecast by Jurisdiction.
7 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Final Growth Forecast by Jurisdiction. The current 2024-2050 RTP/SCS does not provide population projections for 2050.
8 Twentynine Palms General Plan, Land Use Element, Table LU-17, pg. LU-68.
9 City of Twentynine Palms General Plan, Conservation and Open Space Element, Goal CO-4, 2012, accessed October 2025.

thresholds for any criteria pollutant and operational emissions would be negligible. Since its emission levels will not exceed MDAQMD thresholds, which were designed to determine if a project has a significant impact on regional air quality, the Solar Project will not interfere with or hinder the implementation of any air quality plan.

Residential GPA Impacts

MDAQMD states that conformity with growth forecasts can be established by demonstrating that a project is consistent with the land use plan that was used to generate the growth forecast.[10] The Project site is located in the northwest section of the City that is currently assigned two land use and zoning designations: 360 acres are Rural Living (RL-5) and 117 acres are Residential Estate (RS-E). The Project proposes to change the RL-5 designation on the 241 acres north of Samarkand to a new land use and zoning category, Renewable Energy (E), where the Solar Project would be constructed. To compensate for the lost housing capacity on that acreage, the Residential GPA south of Samarkand would redesignate 60 acres of the 119 acres designated RL-5 to Single Family Residential (RS-1), which would accommodate a higher density of dwelling units. Per the City's General Plan maximum dwelling unit density for residential land uses, the existing RL-5 and RS-E land uses accommodate approximately 119 units, and the proposed GPA would redistribute residential density from the northern half to the southern half of the site, ultimately maintaining the site's existing development capacity of 119 residences. Therefore, the Project is consistent with SCAG's growth forecasts for the City because it would not induce unplanned population growth.

As shown in Table 2.4-6, the Project as a whole would result in no net change in residential density and would therefore remain consistent with the existing land use plans and population forecasts incorporated into MDAQMD's air quality management planning. Ultimately, the Residential GPA would not introduce any new air quality impacts beyond those already evaluated in the City's 2012 General Plan or planned for by MDAQMD.

Table 2.4-6
General Plan Dwelling Units and Proposed Project Dwelling Units

General Plan 2012		
Rural Living (RL-5, 0.2 DU/AC)	360 AC	72 DU
Residential Estate (RS-E, 0.4 DU/AC)	117 AC	47 (46.8) DU
EXSTING TOTAL DU		119 DU

[10] MDAQMD, California Environmental Quality Act (CEQA) and Federal Conformity Guidelines, February 2020, https://www.mdaqmd.ca.gov/home/showpublisheddocument/8510/638591628485530000, accessed October 2025.

Table 2.4-6
General Plan Dwelling Units and Proposed Project Dwelling Units

Proposed Project GPA		
Solar Project (E, No residential)	241 AC	--
Single-Family Residential (RS-1) (GPA)	60 AC	60 DU
Rural Living (RL-5, 0.2 DU/AC)	59 AC	12 (11.8) DU
Residential Estate (RS-E, 0.4 DU/AC)	117 AC	47 (46.8) DU
PROPOSED TOTAL DU		119 DU
NET DIFFERENCE		**No Change**

Furthermore, as shown in Tables 2.4-11 and 2.4-12, construction and operational emissions from buildout of the site under the proposed Residential GPA would not exceed daily or annual MDAQMD thresholds for any criteria pollutants. Since its emission levels will not exceed MDAQMD thresholds, which were designed to determine if a project has a significant impact on regional air quality, emissions from development of the site under the proposed Residential GPA will not interfere with or hinder the implementation of any air quality plan.

Conclusion

As discussed above, neither the Solar Project nor the Residential GPA will conflict with or obstruct the implementation of any air quality plan, as the Project as a whole is consistent with the intent of local land use plans and regional growth forecasts. In accordance with the City's policies, the proposed Project shall comply with the provisions of the MDAQMD Rule Book. As shown in Tables 2.4-8, -9, -11, and -12, below, Project emissions would not exceed MDAQMD project-level thresholds of significance, which were designed to determine if a project will have a significant impact on regional air quality. Because buildout of the site would not result in emission levels that would exceed MDAQMD thresholds, the Project will not conflict with or obstruct the implementation of any air quality plan. Air quality impacts related to said plans will 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?

Solar Project Construction Impacts

Forecast modeling of construction and operational emissions for the Project were calculated using the California Emissions Estimator Model (CalEEMod) Version 2022.1, a computer program used in quantifying emissions associated with land development projects in California. The model calculates criteria pollutant emissions, including CO, PM_{10}, $PM_{2.5}$ and the ozone precursors ROG and NO_x, in addition to greenhouse gas equivalent emissions.

Actual construction time for the Solar Project would be nine months. For analysis purposes, the assumed construction timeframe for the Solar Project is six months from January 2026 through June 2026, commencing operations in 2026.

The following provides the construction phasing assumptions entered into the model:

- Site Preparation: 1/5/2026 – 1/9/2026 (5 days)
- Grading: 1/12/2026 – 3/6/2026 (40 days)
- Construction: 3/9/2026 – 6/30/2026 (82 days)

The Solar Project site includes 184 acres (AC), but would disturb 142.2 AC, which includes 9 AC for the off-site access road between Two Mile Road and the Solar Project site and 1.6 AC of disturbance along Two Mile Road for the utility extension line. Vehicle access bridges over natural drainage gullies would be constructed to avoid grading the gullies. Preliminary grading plans indicate that cut and fill materials would balance on site. The Solar Project will require the import of 15,400 cubic yards (CY) of gravel for the off-site and on-site access roads, and 560 CY of concrete for the transformer pad and footings for the racks and steel bridges. Once operational, the Solar Project would only generate emissions from maintenance vehicles visiting the site up to three times per year.

The following Table 2.4-7 provides a summary of the Project's land use assumptions entered into the model. The full CalEEMod report for the Solar Project is available in Appendix C.

Table 2.4-7
Solar Project Land Use Assumptions for CalEEMod

Solar Project Land Use	Measurement Data
Photovoltaic Generating Station (graded area)	131.6 AC (5,732,496 SF)
Off-site Access Road	9 AC (392,040 SF)
Utility Extension Along Two Mile Road	1.6 AC (69,696 SF)
Cut and Fill Material	
• Gravel Import Access Roads	15,400 CY fill
• Concrete Import for Footings, Pad	560 CY fill
Construction Time = 6 months	
Operational Field Maintenance	3 vehicle trips per year

Table 2.4-8 below shows the maximum amount of unmitigated daily and annual emissions for the construction of the Solar Project over a six-month period, which are expected to be lower than the MDAQMD daily thresholds. The CalEEMod calculations are based on a worst-case scenario where all off-road equipment

would be in use simultaneously for the duration of a typical 8-hour workday. With the implementation of mandatory dust control measures imposed by the City and MDAQMD during construction (Rule 403), fugitive dust would be controlled during all ground disturbing activities.

Table 2.4-8
Solar Project
Maximum Construction-Related Emissions
Daily (pounds), Annual (tons)

	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Max. Daily Construction Emissions	175	38.6	89.4	0.11	4.39	2.68
MDAQMD Daily Threshold	548	137	137	137	82	65
Exceeds Daily Max.?	**No**	**No**	**No**	**No**	**No**	**No**
Max. Annual Construction Emissions	8.43	2.26	3.97	0.01	0.22	0.14
MDAQMD Annual Threshold	100	25	25	25	15	12
Exceeds Annual Max.?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix C, Air Quality and Greenhouse Gas Report, prepared by Terra Nova Planning & Research, October 2025.

Given that criteria pollutant thresholds will not be exceeded, and standard best management practices will be applied during construction, construction-related ozone precursor and PM_{10} emissions are not expected to contribute considerably to overall regional concentrations.

Solar Project Operational Impacts

Operational Emissions refer to the ongoing emissions over the life of a project after the construction phase. They include area source emissions, emissions from energy demand, and mobile source emissions. Specifically, CalEEMod factors emissions from sources including, but not limited to, space and water heating by fireplace, natural gas, and propane, from landscaping equipment, and vehicle trips. Note that CalEEMod does not factor in PM_{10} emissions occurring from area atmospheric conditions such as wind.

After the construction phase, the Solar Project would be unmanned and monitored remotely. Electricity produced by the photovoltaic arrays would be transported via underground cable to the Carodean Substation on Two Mile Road. The site would not contain lighting, nor would there be irrigation applied to vegetation. The anticipated operational air pollution emissions from the Solar Project would result from up to three annual two-way vehicle trips by light duty trucks associated with site maintenance. Annual emissions are estimated to be below MDAQMD thresholds. Table 2.4-9 shows the estimated annual emissions during the operational phase of the Solar Project.

Table 2.4-9
Solar Project
Maximum Operational-Related Emissions Summary
Daily (pounds), Annual (tons)

	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Max. Daily Operational Emissions	0.00	0.00	0.00	0.00	0.00	0.00
MDAQMD Threshold	548	137	137	137	82	65
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**
Max. Annual Operational Emissions	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
MDAQMD Threshold	100	25	25	25	15	12
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix C Air Quality and Greenhouse Gas Report, prepared by Terra Nova Planning & Research, October 2025.

The MDAB is classified as an area of non-attainment for ozone and PM_{10} and a significant impact would occur if the Solar Project resulted in a considerable increase of either of these pollutants. According to the modeling, the Solar Project would not increase the concentration of ozone precursors (NOx and ROG) or PM_{10}. Given that criteria pollutant thresholds will not be exceeded, operation-related ozone precursor and PM_{10} emissions are not expected to contribute considerably to overall regional concentrations.

Residential GPA Construction Impacts

Per CEQA regulations, the air quality impacts resulting from the Solar Project and the Residential GPA are analyzed together as one overall Project. Although the proposed GPA would redistribute residential density by concentrating it on the southern half of the site rather than the northern half, the overall Project would maintain the site's existing development capacity of 119 residences and would not introduce any new air quality impacts beyond those already evaluated in the City's 2012 General Plan. Nonetheless, air quality impacts associated with the full buildout of the site (119 units) are described below.

Air quality impacts modeling for residential development of the site is based on generalized residential construction estimates and CalEEMod defaults for the purpose of providing an approximate understanding of potential impacts. The City will require future subdivisions proposed for the southern parcel provide additional air quality analysis to evaluate project-specific impacts.

CalEEMod projected the build out timeframe to be approximately 2.5 years. Table 2.4-10 provides a summary of the assumptions entered into the CalEEMod model. The full report is provided in Appendix C.

Table 2.4-10
Residential GPA Project Land Use Assumptions for CalEEMod

Residential GPA Land Use	Measurement Data
119 residences	236 AC site total but only 56.6 AC disturbed (33 AC = Residential Footprint; 23.6 AC = Streets)
Building square footage	238,000 SF (2,000 SF per home)
Landscaping	238,000 SF (2,000 SF per home)
Streets[1]	6.5 miles (23.6 ac)
Build out time	2 years 5 months
ITE LU Category 210 Operational Trips[2]	1,123 weekday trips

1. Assumes street improvements would cover 10 percent of total acreage.
2. 9.4399 trips per day per dwelling unit according to CalEEMod default ITE trip generation data.

The following CalEEMod default construction timeline was used to project emissions:

- Site Preparation: 2/13/2027 – 3/13/2027 (20 days)
- Grading: 3/14/2027 – 5/16/2027 (45 days)
- Building Construction: 5/17/2027 – 4/16/2029 (500 days)
- Paving: 6/1/2028 – 4/17/2029 – 6/5/2029 (35 days)
- Architectural Coating: 6/6/2029 – 7/25/2029 (35 days)
- Roadway Paving: 1/1/27 – 1/1/2028 (260 working days)

Table 2.4-11 below provides the maximum amount of unmitigated daily emissions resulting from the construction of up to 119 single family homes over a 2.5-year period. Emissions generated by the construction of the homes are projected to be below the MDAQMD thresholds. In keeping with the pace of development that has occurred in Twentynine Palms, these homes may be constructed on an individual basis over a decade rather than all at one time over 2.5 years. Thus, the estimates in Table 2.4-11 provide a conservative analysis of potential construction impacts. Impacts stemming from construction are presumed to be less than significant and would not result in a cumulatively considerable net increase of either ozone or PM_{10}.

Table 2.4-11
Residential GPA
Maximum Daily Construction-Related Emissions Summary
Daily (pounds), Annual (tons)

	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Maxi. Daily Construction Emissions	62.2	51.8	84.4	0.12	12.1	6.31
MDAQMD Threshold	548	137	137	137	82	65
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**
Maxi. Annual Construction Emissions	5.44	4.04	1.55	0.01	0.59	0.27
MDAQMD Threshold	100	25	25	25	15	12
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix C Air Quality and Greenhouse Gas Report, prepared by Terra Nova Planning & Research, October 2025.

Residential GPA Operational Impacts

Once operational, the 119 residences would generate emissions resulting from area sources, energy demand, and mobile sources. CalEEMod defaults were assumed for electricity and natural gas demand. Southern California Edison 2029 intensity factors (as provided in CalEEMod) were applied, consistent with the 2.5-year buildout projections modeled in CalEEMod.

Estimates of mobile source emissions, or emissions from traffic that results from a project, are based on the potential number of two-way trips generated by a project. These forecasts of two-way trips are also based on the amount of traffic associated with a project's particular land use category as defined by the Institute of Transportation Engineers (ITE) Trip Generation Manual. According to the ITE Land Use Code 210 (detached residential land use), the estimated average number of daily trips that would be generated by one residence is 9.4399. Upon buildout of up to 119 residences, the average number of daily trips per weekday would be 1,123. Table 2.4-12 summarizes the daily maximum unmitigated emissions of criteria pollutants generated once the residential land uses are built out.

Table 2.4-12
Residential GPA
Unmitigated Maximum Daily Operational-Related Emissions Summary
(pounds per day)

Scenario	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Max. Daily Operational Emissions	40.6	7.17	10.7	0.09	7.34	2.08
MDAQMD Threshold	548	137	137	137	82	65
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**
Max. Annual Operational Emissions	5.63	0.96	1.77	0.01	1.28	0.35
MDAQMD Threshold	100	25	25	25	15	12
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix C Air Quality and Greenhouse Gas Report, prepared by Terra Nova Planning & Research, October 2025.

As noted in Table 2.4-9, the operational emissions from the Solar Project will be negligible, and even if added to the emissions of the residential units shown in Table 2.4-12, total Project emissions will not exceed MDAQMD thresholds.

Cumulative Contribution

A significant impact could occur if the Project would make a considerable cumulative contribution to federal or state non-attainment pollutants. The MDAB is classified as a "non-attainment" area for PM_{10} and ozone. Cumulative air quality analysis is evaluated on a regional scale (rather than a neighborhood or city scale, for example), given the dispersing nature of pollutant emissions and aggregate impacts from surrounding jurisdictions and air management districts. Any development project or activity resulting in emissions of PM_{10}, ozone, or ozone precursors will contribute, to some degree, to regional non-attainment designations of ozone and PM_{10}.

The MDAQMD does not currently recommend quantified analyses of construction and/or operational emissions from multiple development projects, nor does it provide methodologies or thresholds of significance to be used to assess the significance of cumulative emissions generated by multiple cumulative projects. However, it is recommended that a project's potential contribution to cumulative impacts be assessed utilizing the same significance criteria as those for project-specific impacts. Furthermore, South Coast Air Quality Management District (SCAQMD), a neighboring air district, states that if an individual development project generates less than significant construction or operational emissions, then the project would not generate a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment[11].

As shown in the tables above, Project-related PM_{10}, CO, NO_x, and ROG emissions are projected to be below established MDAQMD thresholds. Therefore, the proposed Project will result in incremental, but not cumulatively considerable impacts on regional PM_{10} or ozone levels.

Summary

As shown above, both construction and operation of the Project will result in criteria emissions below the MDAQMD significance thresholds, and neither would violate any air quality standard or contribute substantially to an existing or projected air quality violation. Impacts related to construction and operation will be less than significant and are not cumulatively considerable from a non-attainment standpoint.

[11] White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution. SCAQMD, August 2003. http://www.aqmd.gov/docs/default-source/Agendas/Environmental-Justice/cumulative-impacts-working-group/cumulative-impacts-white-paper.pdf), page 7.

c) Expose sensitive receptors to substantial pollutant concentrations?

The MDAQMD considers residences, schools, daycare centers, playground, and medical facilities as sensitive receptor land uses. According to the MDAQMD CEQA Guidelines, certain project types on sites within a specified distance of a sensitive receptor must be evaluated using significance threshold criteria number 4:

> (4) [A project is significant if it] *Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1*.

The threshold distances that specific project types must be from sensitive receptors, as specified by the MDAQMD, are as follows:

- Any industrial project within 1,000 feet;
- A distribution center (40 or more trucks per day) within 1,000 feet;
- A major transportation project (50,000 or more vehicle per day) within 1,000 feet;
- A dry cleaner using perchloroethylene within 500 feet;
- A gasoline dispensing facility within 300 feet.[12]

To reduce exposure to toxic air contaminants (TACs), CARB recommends minimum separation distances between new sensitive land uses, such as residences, and eight categories of existing sources of TACs: high-traffic freeways and roads, distribution centers, rail yards, ports, refineries, chrome plating facilities, perchloroethylene dry cleaners, and large gas stations.[13] The proposed Project neither proposes the development of any such facilities, nor is it situated in proximity to any such facility. While the Project is bound by three existing arterial roads, CARB defines freeways and high traffic roads as including rural roads with 50,000 vehicles per day. As shown in the Traffic Impact Analysis prepared for the Project by Urban Crossroads, nearby roadways have average daily traffic (ADT) volumes of up to 39,300 vehicles per day in horizon year (2045) with Project weekday conditions.[14] The preparation of an HRA is therefore not required nor needed to determine that the Project will not cause any significant air quality-related health risks to residents in the Project vicinity.

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12 MDAQMD, California Environmental Quality Act (CEQA) and Federal Conformity Guidelines, February 2020, https://www.mdaqmd.ca.gov/home/showpublisheddocument/8510/638591628485530000, accessed February 2025.

13 CalEPA and CARB, Air Quality and Land Use Handbook: A Community Health Perspective (April 2005).

14 Thermal Ranch Specific Plan Traffic Analysis, prepared by Urban Crossroads, Inc. (date), Exhibit 7-9: Horizon Year (2045) with Project Weekday Average Daily Traffic (ADT) Volumes.

Solar Project Impacts

The proposed Solar Project is considered to be an industrial land use, but it would be an unmanned electric generating facility and would not emit pollutants known to cause cancer. During the operational phase, mobile emissions would consist of approximately three annual maintenance trips. The nearest sensitive receptor land uses are Rural Living (RL-5) residences to the east, with the nearest residence being over 1,400 feet from the east boundary of the Solar Project site. Given that the Solar Project occurs beyond the specified distance from any sensitive receptor land uses, no further evaluation per the MDAQMD significance threshold criteria number 4 described above is required.

Residential GPA Impacts

The single-family residential land use would comply with the City's residential land use and zoning designation for this Project site where the Residential GPA is proposed. The unit density increase from one unit per five acres to one unit per one acre would result in a greater number of homes, however, the density is consistent with existing RS-1 designations 0.25 miles to the east along Sunrise Road. As this proposed Residential GPA density increase does not include uses that emit substantial pollutant concentrations such as an industrial project, distribution center, major transportation project, dry cleaner or gasoline dispensing facility, less than significant impacts are anticipated.

Per the MDAQMD guidelines for sensitive receptors, the Solar Project and the Residential GPA are expected to generate less than significant impacts.

Health Impacts

It is not scientifically possible to calculate the degree to which exposure to various levels of criteria pollutant emissions will impact an individual's health. There are several factors that make predicting a project-specific numerical impact difficult:

a. Not all individuals will be affected equally due to medical history. Some may have medical pre-dispositions and diet and exercise levels tend to vary across a population.
b. Due to the dispersing nature of pollutants, it is difficult to locate and identify which group of individuals will be impacted, either directly or indirectly.
c. There are currently no approved methodologies or studies to base assumptions on, such as baseline health levels or emission level-to-health risk ratios.

Due to these limitations, the extent to which an individual project poses a health risk is uncertain but unavoidable. As discussed in response b), impacts associated with all criteria pollutants will be less than significant, and thus health effects will also be less than significant.

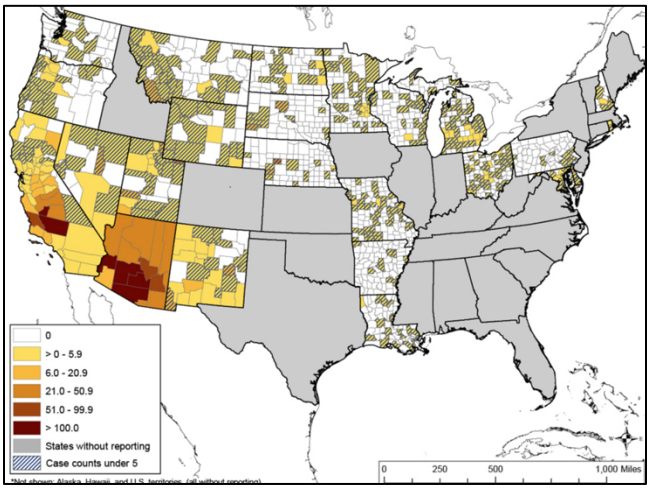
Valley Fever

San Bernardino County experiences very low rates of Valley Fever. The County's population of 2,193,656 in 2022, experienced 66 cases of Valley Fever, which represent an incidence rate of 3 per 100,000. Furthermore, this rate is throughout San Bernardino County, not solely in Twentynine Palms.

Furthermore, according to the federal Centers for Disease Control (CDC), there has been no outbreak of Valley fever in San Bernardino County, as shown in this published map.[15]



Finally, also according to the CDC, San Bernardino County is reported as having the lowest range of cases among reporting counties, at 0-5.9 per 100,000, as shown in the CDC incidence map below.



Although the site will be graded for both the Solar Project and the Residential GPA, the potential for the release of the spores which result in Valley Fever is considered low, given the County-wide low incidence rates. In addition, as discussed above, compliance with standard dust control measures would limit the amount of fugitive dust generated during construction, further minimizing the potential for any released spores to become airborne. Implementation of the proposed habitat restoration plan as required pursuant to Mitigation Measure

15 https://www.cdc.gov/fungal/diseases/coccidioidomycosis/maps.html

AES-1 would further reduce the potential for dust impacts, in that replanting the site is expected to increase soil stability and reduce the long-term potential for fugitive dust. Less than significant impacts are expected.

2.4.7 Mitigation Measures

The proposed Project would not conflict with applicable air quality management plans because the buildout population is consistent with SCAG forecasts. As discussed in response b), impacts associated with all criteria pollutants will be less than significant. In addition, compliance with the City's General Plan policies and standard MDAQMD rules and regulations will ensure future impacts, including impacts associated with fugitive dust, remain less than significant. No additional mitigation measures are required.

2.4.8 Significance After Mitigation

Impacts were found to be less than significant; no mitigation is required.

2.4.9 Cumulative Impacts

Impacts to air quality are assessed on a cumulative, regional scale due to the dispersing nature of pollutant emissions and the aggregate impacts from surrounding jurisdictions. The MDAB is non-attainment for PM_{10} and ozone. Any activity resulting in the emissions of PM_{10}, ozone, or ozone precursors will contribute, to some extent, to the regional non-attainment designation for these criteria pollutants. However, the level of cumulative impacts on regional air quality resulting from a single project are difficult to measure.

The Project will contribute to incremental increases in criteria air pollutant emissions. As discussed in Section 2.4.6 (b), the Project is not expected to exceed the MDAQMD thresholds for any criteria pollutant during its construction of operations and is therefore determined to have a less than significant impact. Given that the Project would not contribute significant impacts to pollutants for which the region is in non-attainment, impacts to regional ozone and PM_{10} levels would not be cumulatively considerable.

2.5 Biological Resources

2.5.1 Introduction

The following provides an overview of the existing biological resource conditions within the Project area and surrounding region and an analysis of potential biological resource impacts that would result from implementation of the proposed Project. This discussion is based in part on the Project-specific Biological Resources Technical Report (BRTR) prepared by Dudek,[1] which surveyed a total of 241.3 acres including the 184± acre Solar Project site, as well as a 3.3± acre off-site area, plus a 100-foot buffer, as well as 11.7± acres of future roadway dedication, excluding the western extension of Samarkand Drive. The BRTR is appended to this EIR as Appendix D.1. Site surveys were conducted on foot between the month of April 2023 and July 2024; the findings of the surveys are detailed in the BRTR. In addition to the BRTR, Dudek also prepared an Aquatic Resources Delineation Report[2] (Appendix D.2), a Habitat Restoration Plan[3] (Appendix D.3), a Burrowing Owl Relocation Plan[4] (Appendix D.4), and a Desert Tortoise Survey Letter Report[5] (Appendix D.5) for the Solar Project, which have also been used in analyzing impacts to biological resources.

2.5.2 Thresholds of Significance

The following thresholds of significance or criteria are derived from Appendix G of CEQA, and are used to determine if and to what extent a project may have a potentially significant impact on biological resources. The proposed Project would have a significant effect on biological resources if it is determined that the Project will:

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?

1 Biological Resources Technical Report for the E-Group PS Solar Project, prepared by Dudek, April 2025.
2 Aquatic Resources Delineation Report for the E-Group PS Solar Project, prepared by Dudek, January 2025.
3 Habitat Restoration Plan for the E-Group PS Solar Project, prepared by Dudek, January 2025.
4 Burrowing Owl Relocation Plan for the E-Group PS Solar Project, prepared by Dudek, January 2025.
5 2025 Desert Tortoise Survey Letter Report for the E-Group PS Solar Project, prepared by Dudek, May 2025

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

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (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. (General Plan)

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 Initial Study determined that the Project would result in "No Impact" for threshold questions c) and f). The Project will not impact a federally protected wetland and would not conflict with an adopted habitat conservation plan. Therefore, they are not analyzed further in this EIR.

2.5.3 Regulatory Framework

Federal

Endangered Species Act (ESA)

Established in 1973 and implemented by the National Oceanic Atmospheric Administration Fisheries Service (NOAA Fisheries Service) and the U.S. Fish and Wildlife Service (USFWS), the Act aims to conserve biological diversity by protecting fish, wildlife, and plants designated as threatened or endangered, and the ecosystem on which they depend. The ESA requires federal agencies to ensure all actions authorized, funded, and carried out have a low probability of causing harm to federally listed species or result in the destruction or alteration of a designated critical habitat. The Act prohibits the import and removal by export or commercial sale of listed species. Actions that jeopardize federally listed species and the habitats upon which they rely are considered a "take" under the federal ESA and are prohibited without a special permit. Under the ESA, "take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect,

or to attempt to engage in any such conduct." The ESA allows for take of a threatened or endangered species incidental to proposed actions pursuant to Incidental Take Permit (ITP) regulations. Section 7 of the ESA allows for such takes when a federal permit is required after formal consultations have deemed that proposed disturbance activities will not jeopardize the continued existence of the species. Section 10 allows for take upon the approval of Habitat Conservation Plans on private property without any other federal agency involvement.

Migratory Bird Treaty Act (MBTA)

Enacted in 1918, the Act expanded into an international convention agreement between the U.S. and Canada in 1916, Mexico in 1936, Japan in 1972, and Russia in 1976. The Act prohibits takes, captures, kills, or attempts to take, capture, or kill protected migratory bird species by any means or in any manner without prior authorization by the USFWS. Under the MBTA, "take" is defined as pursuing, hunting, shooting, capturing, collecting, or killing, or attempting to do so. The Department of Interior reinstated Solicitor Opinion M-37050 (2017), which states that only deliberate acts intended to take a migratory bird are prohibited under the MBTA and that incidental deaths of migratory birds are not prohibited. For a species to be selected as a protected migratory species under the MBTA, it must meet one or more of the following criteria:

- Occur in the U.S. or U.S. territories as a result of natural biological or ecological processes and is currently, or was previously listed as a species or part of a family protected by one of the four international treaties or their amendments.
- Revised taxonomy results in the species being newly split from a species that was previously on the list, and the new species occurs in the U.S. or U.S. territories as the result of natural biological or ecological processes.
- New evidence exists for its natural occurrence in the U.S. or U.S. territories resulting from natural distributional changes and the species occurs in a protected family.

The list of migratory bird species protected by MBTA is found in Title 50, Section 10.13, of the Code of Federal Regulation.

Clean Water Act (CWA) Section 404

Amended in 1972, Section 404 of the CWA prohibits the discharge of dredge and fill material into the waters of the U.S. including wetlands. Section 404 of the CWA is administered by the USACE and establishes a permit program regulating the discharge of dredged or fill material into waters of the United States, including wetlands, whose geographic scope is determined by the definition of "waters of the United States." The Supreme Court in Sackett v. EPA clarified that waters of the US are to encompass only relatively permanent, standing or continuously flowing bodies of water forming geographical features commonly described as streams,

oceans, rivers, and lakes. The USACE delineates waters as potential jurisdictional wetlands by the type of soil, vegetation, and hydrology conditions that characterizes the water in question.

State

California Endangered Species Act (CESA)
Enacted in 1970, amended in 1997, and enforced by the California Department of Fish and Wildlife (CDFW), the Act aims to conserve biological diversity by protecting California's native plant and wildlife species whose population size has been reduced to dangerous levels. Different from the ESA that lists endangered and threatened species, the CESA also protects candidate species. By law, the import, export, removal, and take of any endangered, threatened, and candidate species listed by the state is prohibited, without prior authorization from the CDFW. The Act defines "take" as the hunting, pursuing, catching, capturing, or killing, or attempt of these activities to any state listed species.

Native Plant Protection Act (NPPA)
Established in 1977, the Act allows the CDFW to identify and designate plant species, subspecies, or varieties as rare or endangered including, but not limited to, the plant species covered by the CESA. The Act aims to conserve and protect native plant species whose population has been substantially reduced due to commercial exploitation, habitat loss, and other factors that have driven the species to become endangered. Under the NPPA, the taking, possession, transport, import, export, and sale of the State's listed rare, threatened, and endangered species is prohibited without prior notification and permit approval from the CDFW.

Desert Native Plants Act
The California Desert Native Plants Act (CDNPA) seeks to protect designated native desert plant species from unauthorized harvesting on public and private lands within the boundaries of Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego Counties. The CDNPA prohibits the collection, transport, sale, or possession of such plants without a valid permit or wood receipt accompanied by the requisite tags and seals, which are obtainable from the applicable county's sheriff or commissioner for a fee.

Natural Community Conservation Planning Act (NCCPA)
Established in 1991, the NCCPA enables the CDFW to create a holistic, ecosystem conservation plan for the protection and sustainability of regional biological diversity. The Act attempts to protect plants, animals, and their habitat, while allowing compatible economic activity to occur. The NCCPA generates an approach in which project related impacts to the environment and wildlife, including species covered by ESA and CESA, are avoided, minimized, or

compensated. The CDFW, under the NCCPA, helps local governments prepare a natural community conservation plan that is compatible with land use designations.

CWA Section 401 Water Quality Certification and Wetlands Program

The 401 Water Quality Certification and Wetlands Program regulates discharges into waters of the state under Section 401 of the federal Clean Water Act and the Porter-Cologne Water Quality Control Act. The State Water Resources Control Board (SWRCB) defines "waters of the state" as any surface water or groundwater, including saline waters and wetlands, within California's boundaries. Features deemed non-jurisdictional under federal law (e.g., by the USACE due to lacking a significant nexus to traditional navigable waters or exceeding the ordinary high water mark) may still qualify as waters of the state if they align with the state's definition. The SWRCB and Regional Water Quality Control Boards (RWQCBs) administer the 401 Water Quality Certification and Wetlands Program, which requires states or tribes with "treatment as a state" TSA status to issue or waive a Section 401 certification before applicants can obtain a federal license or permit for activities involving discharges into waters of the U.S. The Program mandates a State and/or tribe with TSA status to issue or waive a Section 401 water quality certification before an applicant is allowed to file for a federal license or permit to conduct activities that may result in the discharge into the waters of the U.S. If a project does not require a federal license or permit but may result in a discharge of harmful substances to waters of the State, the applicable RWQCB has the option to regulate such activities under its State authority in the form of a waiver or certification of waste discharge requirements. The purpose of the CWA Section 401 is to provide States and authorized tribes the power to dictate and achieve water quality goals with the federal government as a secondary assessor.

California Fish and Game Code

Section 1601-1603 of the Code prohibits the diversion or obstruction of the natural flow of any river, stream, or lake. The disposal of material into the bed, channel, or bank of, any river, stream, or lake is also prohibited. The definition of "any river, stream, or lake" assumes the dry period of time and flow year-round. The CDFW is granted authority to administer the State Code of Regulations and its jurisdictional waters are determined if one or more of the following criteria are met:

- At minimum, intermittent and seasonal flow through a bed or channel with banks and that also support fish or other aquatic life.
- A watercourse having a surface or subsurface flow regime that supports or that has supported riparian vegetation.
- Hydrogeomorphically distinct top-of-embarkment to top-of-embankment limits.
- Outer ground cover and canopy extents of, typically, riparian associated

vegetation species that would be sustained by surface and/or subsurface waters of the watercourse.

If an activity would (1) substantially divert or obstruct the natural flow of, or substantially change or use any material from, the bed, channel, or bank of any river, stream, or lake, or (2) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, then the applicant is required to apply for a Lake and Streambed Alteration (LSA) Agreement in which the impacts are addressed and mitigation measures are prepared.

Under Section 2081, the CDFW allows the take of endangered, threatened, and candidate species covered by the CESA, if one of the following conditions occur:

- The take is incidental to an otherwise lawful activity.
- The impact of the take is minimized and fully mitigated.
- The applicant adequately funds and monitors the implementation of all measures.

Section 3505.5 of the Fish and Game Code prohibits the unlawful take, sale, or purchase of any birds in the Falconiformes or Strigiformes orders (birds-of-prey) or to take, sell, or purchase the nest or eggs of any bird-of-prey. Sections 3511 and 3513 prohibit the taking or possession of fully protected birds or their parts at any time, as well as any migratory non-game birds designated under the MBTA.

Regional/Local

San Bernardino County Development Code: Native Plants

San Bernardino County's Development Code Chapter 88.01.060 is implemented by the City to conform to the NPPA. Chapter 88.01.060 provides for the conservation of specified desert plant species, including smoketree, mesquites, century plants, nolinas, yuccas, creosote rings of 10 feet or greater in diameter, Joshua trees, desert ironwood and palo verdes. The Code requires that project applicants secure native plant removal permits prior to disturbance of project sites for development.

Twentynine Palms General Plan

Updated in 2012, the City General Plan Land Use and Conservation and Open Space Elements establish the conservation efforts, goals, policies, and programs for the protection of the local wildlife, plant, and special status species that naturally occur within the City's limit. Those especially relevant to the proposed Project are set forth below.

Land Use Element

Goal LU-5 Preserve Twentynine Palms natural resources and protect the public health, safety and general welfare of City residents in areas adjacent to potentially hazardous natural and man-made features and facilities.

Policy LU-5.1 Development standards for the General Plan Overlays shall be established to protect the area's natural resources and better protect the public's health, safety and general welfare.

Policy LU-5.3 Development within the General Plan Overlays shall be environmentally sensitive, minimize adverse environmental impacts, and enhance existing natural resources.

Goal LU-7 Protect and preserve Twentynine Palms natural resources, promote the existing quality of life and prepare future residents by promoting superior sustainable development.

Policy LU-7.2 Development shall be sustainable in its use of land use and shall limit impacts to natural resources, energy, and air and water quality.

Policy LU-7.5 Allow clustering of residential development in sensitive areas of the City to protect and preserve the area's natural resources for future generations.

Conservation and Open Space Element

Goal CO-1 Designate, maintain and enhance the quality of permanently protected open space used by both endangered and special status species.

Policy CO-1.1 Until such time as the West Mojave Plan is adopted, require proposed development projects on previously undeveloped land in areas identified in Exhibit CO-2 through CO-7, Special Status Biological Resources, or other areas where suitable habitat may occur, to prepare a biological assessment in accordance with current state and federal requirements to determine the occurrence of any endangered or special status species or habitat and to adopt migration measures.

Policy CO-1.2 Require focused surveys for the burrowing owl for development projects on vacant properties, to determine the occurrence of burrowing owl and prepare mitigation measures if necessary.

Policy CO-1.8 Encourage developers to preserve, protect, and at a minimum salvage naturally occurring desert plant materials for incorporation into project landscaping to the greatest extent possible.

Finally, the Project area is located within the Wildlife Linkage Area identified in Exhibit OS-3 of the Conservation and Open Space Element.

Twentynine Palms Municipal Code

Section 19.26.020 regulates and restricts development within wildlife corridor overlay districts to protect and ensure the integrity of the area's natural aesthetic and biological resource. The protection of these districts is significant to the region of Twentynine Palms because these wildlife corridors are strips of natural habitat connecting the Morongo Basin with the Mojave Desert. Portions of Twentynine Palms, including the northwest region that includes the site, are identified as wildlife corridors. Section 19.26.020 imposes restrictions that include minimal grading, development that minimizes disturbance to the biological resource, and minimizes impacts to natural resources. These standards are imposed on new development and existing buildings undergoing significant alterations in which compliance is deemed necessary and therefore required.

Chapter 19.98 of the Twentynine Palms Municipal Code requires a take permit from CDFW prior to the removal, relocation, or trimming of any Western Joshua tree (Yucca brevifolia) or any part thereof.

2.5.4 Environmental Setting

Located in the Morongo Basin and the southwestern region of the Mojave Desert Province, the City of Twentynine Palms is characterized by relatively flat, sparsely vegetated valley floor, dry lakes, desert dunes, sandhills, and mountain ranges located across the southern boundary. A large portion of the City is located at an elevation between 2,500 to 5,000 feet above mean sea level. The highest elevation occurs near the mountains, and the lowest elevation occurs around the northern, eastern, and western portion of the City.

The local climate is indicative of the high desert with high temperatures during the dry summers, low temperatures during the cold winters, strong winds, and low annual precipitation. Twentynine Palms receives less than five inches of rainfall per year and is subject to intense late summer thunder showers.[6]

The City encompasses a total of ±37,642 acres (or 59 square miles). In addition, ±19,539 acres (30 square miles) are part of the City's Sphere of Influence (SOI).

[6] City of Twentynine Palms General Plan, Conservation and Open Space, 2012.

Key habitats, unique to the Morongo Basin, occur here and provide a diverse subset of wildlife and plants species. Two significant areas of particular biological diversity include the Marine Corps Air Ground Combat Center (MCAGCC) and the Joshua Tree National Park.

The MCAGCC supports nearly 400 plant species and more than 250 vertebrate wildlife species. The Joshua Tree National Park is a wildlife sanctuary for more than 250 resident and migratory birds, 52 mammals, 44 reptiles, 3 amphibians, and more than 700 vascular plant species.[7] The wide range of wildlife species including mammals, reptiles, invertebrates, and birds have adapted to the desert environment. Of these, 36 animal species and 16 plant species are classified as special status species and are known to or have the potential to occur within Twentynine Palms. Many species overlap with Federal and State conservation efforts such as the Desert Tortoise and Swainson's Hawk that are listed as threated species by the USFWS and CDFW. Of the 16 special status plant species, none are listed as endangered or threated by the USFWS or the CDFW, but are listed as rare by the California Native Plant Society (CNPS).

Throughout Twentynine Palms, wildlife corridors connect the Morongo Basin to the wider Mojave Desert. These ecological transition zones foster biological diversity and create spaces where native plants and animals live and travel.

Most of Twentynine Palms, including Project site, is within the Southern Mojave Subbasin, and within the Indian Cove–Rattlesnake Canyon sub-watershed of the Mesquite Lake watershed. The Southern Mojave subbasin comprises approximately 8,867 square miles and spans both San Bernardino and Riverside counties. The primary geographic and surface hydrologic feature of the watershed is the Mojave River, which flows northeast from the San Bernardino Mountains for approximately 100 miles until it its terminus at Soda Lake. The Mesquite Lake watershed comprises 60 square miles (63,450.75 acres) and is partially within the City of Twentynine Palms.

2.5.5 Existing Conditions

The Project is located in the Morongo Basin portion of the Mojave Desert. The Mojave Desert is separated from the Sonoran Desert to the south by the Little San Bernardino Mountains and Eagle Mountains that are extensions of the Transverse Ranges. The Western Mojave Desert is a flat, sparsely vegetated region that is interspersed with mountain ranges and dry lakes. In Twentynine Palms, distinct high desert landforms and soil types such as sand dunes, sand sheets, pebble plains, and carbonate rock and soil occur within the area.

[7] Morongo Basin Conservation Agency, "Native Wildlife", https://www.mbconservation.org/native_wildlife, accessed March 2024.

The Project is in Twentynine Palms' northwestern region, within an area that is predominantly desert open space with sparse residential development to the east and southeast. The Project encompasses ±477 acres of vacant, undeveloped desert lands, and will include the development of a commercial solar array on ±184 acres of the northern 241 acres with off-site improvements as described in Section 1 of this EIR. The remaining 236 acres would remain residential, with 60 acres subject to the proposed GPA and Rezone; however, development of this area is not proposed at this time.

This section describes the Project site's existing conditions based in part on the findings of a BRTR that was completed for a 241.3 acre biological survey area (BSA) encompassing the Solar Project site and off-site improvements, including the off-site gen-tie lines and access roads plus a 100-foot buffer zone and future roadway dedication (Appendix D.1). The following focused surveys were completed for the solar portion of the Project:

Table 2.5-1
Focused Surveys within the Solar Project Area

Type of Focused Survey	Date
Aquatic Resources Delineation	April 28, 2023 August 89, 2023 December 15, 2023 June 17, 2024
Vegetation Mapping/ Habitat Assessment	November 20-21, 2023
Mojave Desert Tortoise Protocol Survey	December 7-8 & 14-15, 2023 May 6-9, 2025
Western Joshua Tree Survey	December 11, 2023
Desert Native Plant Survey	March 21-22 & 26-29, 2024
Rare Plant Survey	April 2, 9, 19, & 23, 2024
Burrowing Owl Survey	March 26-29, 2024 April 23-24, 2024 May 21-22, 2024 July 1-2, 2024
Source: Table 1. Survey Conditions, Biological Resource Technical Report for E-Group PS Solar Project, Dudek, January 2025.	

The BSA does not include surveys of the southern 236-acres of the Project site because development plans are not proposed. However, given the uniform environmental condition between the solar site and adjoining southern parcel, it is reasonable to assume similar biological resources and conditions identified in the BRTR may also occur within the unsurveyed southern areas of the Project site.

Soils and Topography

The soil types on-site generally consist of sandy/gravelly soils. The natural topography of the surveyed area slopes towards the north and northeast at an elevation ranging from approximately 2,350 to 2,060 feet above mean sea level. The higher elevation is located across the southwestern portion and lower elevation is near the northernmost portion of the BSA.[8]

Vegetation Communities and Land Cover

The BRTR recorded a total of six (6) vegetation communities and land cover types including Creosote Bush-White Bursage Scrub (includes two scrub alliance communities: white bursage scrub and creosote bush), Cheesebrush-Sweetbush Scrub, Desert Willow-Smoketree Wash Woodland, disturbed habitat[9], and urban and developed land[10]. Creosote Bush-White Bursage Scrub was observed on 216 acres; Cheesebrush-Sweetbush Scrub was observed on 14.5 acres; Desert Willow-Smoketree Wash Woodland was observed on 6.2 acres; 1.9 acres was classified as disturbed habitat; and 2.7 acres was classified as urban/developed.

Creosote Bush-White Bursage Scrub and Cheesebrush-Sweetbush Scrub are considered secure and are not designated sensitive natural communities by CDFW. Desert Willow-Smoketree Wash Woodland, however, is considered a sensitive natural community by CDFW. On the solar site, desert-willow–smoketree wash woodland occurs in a medium linear patch that stretches diagonally within identified riparian habitat located in the northwestern corner of the BSA and a small patch of identified riparian habitat in the northeastern portion of the BSA. Neither patch of desert-willow–smoketree wash woodland is located within the proposed development footprint.

Within the BSA, disturbed habitat comprises an east–west trending dirt road, representing an undeveloped portion of Samarkand Drive that runs along the southern boundary of the BSA. The urban/developed land cover consists of Two Mile Road, an off-site paved road, and a section of the nearby Southern California Edison Carodean Substation. The developed land cover within off-site improvement areas consists of Two Mile Road (paved), and a section of the nearby Southern California Edison Carodean Substation. Signs of active off-road-

8 Biological Resources Technical Report for the E-Group PS Solar Project, prepared by Dudek, April 2025.

9 Disturbed habitat refers areas that have been physically disturbed (by previous legal human activity) and are no longer recognizable as a native or naturalized vegetation association, but that continue to retain a soil substrate. If vegetation is present, it is typically composed of non-native plant species such as ornamentals or ruderal exotic species that take advantage of disturbance

10 Urban or developed land covers refer to areas that have been constructed on or otherwise physically altered to the point where vegetation is no longer present. Urban or developed areas are characterized by permanent or semi-permanent structures, hardscapes, and landscaped areas that require irrigation

vehicle use were observed within the ephemeral washes of the BSA and the undeveloped portion of Samarkand Drive, an east-west trending dirt road that bisects the Project site that also shows signs of active use and disturbed habitat.

Special Status Species

The classification of "special status species" defines a plant or wildlife species that is rare or its population size is in decline. Special-status species' potential to occur in the Project area were evaluated based on known species distribution, species-specific habitat preferences, and Dudek biologists' knowledge of regional biological resources. Species potentially occurring within the solar BSA are identified as having moderate or high potential to occur based on habitat conditions on site, and species for which there is little or no suitable habitat are identified as not expected to occur or having low potential to occur.

Plants

A total of 104 species of native or naturalized plants, including 99 native and 5 non-native, were recorded within the BSA. See Appendix D.1 for a full list. Based on the results of the BRTR literature review and database searches, 21 special-status plant species were reported as occurring in and surrounding the Project site. Of these, 12 species were determined to have a moderate to high potential to occur based on suitable soils and vegetation communities present within the BSA and historical occurrences: California ayenia, alkali mariposa-lily, Rau's jaffueliobryum moss, Wright's jaffueliobryum moss, little San Bernardino Mountains linanthus, spear-leaf matelea, Mojave menodora, appressed muhly, Latimer's woodland-gilia, salt spring checkerbloom, jackass-clover, and western Joshua tree. Focused surveys for these species were conducted within the solar BSA in April 2024. No special-status plant species, including the target species, were observed during the 2024 survey.

Three non-listed special-status plant species, Joshua Tree poppy, Utah vine milkweed, and Thurber's beardtongue were observed within the BSA; however, they are not considered rare, but only limited in distribution or infrequent throughout a broader range in California and are not considered further.

Wildlife

A total of 38 wildlife species were observed in the BSA, consisting of 37 native and one (1) non-native species. Of the group, there are 17 bird species, 5 invertebrates, 5 mammals, and 11 reptiles. See Appendix D.1 for a full list. Based on the results of the BRTR literature review and database searches, 21 special-status wildlife species were reported as occurring in the Project vicinity. Of these 21 species, three were observed during field surveys (loggerhead shrike, vermillion flycatcher, and Mojave desert tortoise) and two were determined to have a moderate or high potential to occur within the BSA based on habitat present

and/or the BSA's proximity to previous known locations in records (burrowing owl and desert kit fox).

The following table lists sensitive wildlife species with a moderate or greater potential of occurring on the Solar Project site, their listing status, and the likelihood for occurrence at or in proximity to the site.

Table 2.5-2
Sensitive Species Probability of Occurrence within the Solar Project Area

Species	Status	Probability to Occur
Mammals		
Desert Kit Fox	Federal: None State: None	**Moderate Potential to Occur.** The site contains sparse desert scrub habitat such as creosote scrub, but the possibility for stray dogs limits habitat potential in the area. Tracks of the desert kit fox were observed during the 2024 burrowing owl surveys.
Birds		
Loggerhead Shrike	Federal: None State: Species of Special Concern	Suitable Nesting: **Observed.** Foraging: **Observed.** Suitable nesting and foraging habitat occur within the site. This species was observed immediately outside the 100-foot buffer zone.
Vermilion Flycatcher	Federal: None State: Species of Special Concern	Nesting: **None.** Foraging: **Observed.** Suitable foraging habitat occurs within the site. This species was observed foraging and perching on a Mojave yucca within the northwestern portion of the site. Nesting sites are not known to occur within vicinity.

Table 2.5-2
Sensitive Species Probability of Occurrence within the Solar Project Area

Species	Status	Probability to Occur
Burrowing Owl	Federal: Bird of Conservation Concern State: Species of Special Concern	Nesting: **Moderate.** Foraging: **Moderate.** Suitable habitat and burrows were observed within the site. Signs of burrowing owls were limited to pellets observed at one burrow located within the northwestern portion of the site. No burrowing owl was detected during the 2024 focused surveys.
Reptile		
Mojave Desert Tortoise	Federal: Threatened State: Threatened	**Observed.** Active sign and multiple individuals were observed within the site during the 2023 and 2024 Desert Tortoise protocol surveys.
Source: Biological Resource Technical Report for E-Group PS Solar Project, Dudek, April 2025.		

The desert kit fox is not considered listed by the USFWS or CDFW under any special-status designation, however this species is considered a "fur-bearing mammal," protected from take under the California Fish and Game Commission's Mammal Hunting Regulations. Desert kit fox has a moderate potential to occur within the BSA due to the presence of suitable habitat and sign (i.e., tracks) observed during the 2024 burrow surveys and potentially suitable burrows.

Loggerhead shrike is a California Species of Special Concern. Loggerhead shrike was observed during biological surveys along the northern boundary of the BSA.

Vermilion flycatcher is a California Species of Special Concern. One vermilion flycatcher was observed during a survey in March 2024 foraging and perching on a Mojave yucca within the northwestern portion of the BSA.

The Mojave desert tortoise is listed as a "threatened" species and thus protected by the USFWS and CDFW under the ESA. Factors that have contributed to the species' classification include predation, habitat loss, and population decline.[11] Mojave desert tortoise Protocol surveys were conducted in 2023 and 2025 (Appendix D.1 and D.5). From the 2025 protocol survey, two live Mojave desert

[11] Bureau of Land Management, "The Threatened Desert Tortoise", https://www.blm.gov/sites/blm.gov/files/documents.pdf, accessed March 2024.

tortoises, one adult male and one adult female, were observed within the southwestern portion of the BSA. In addition, 16 suitable tortoise burrows and two tortoise pallets (i.e. shallow burrows/shelters likely used by a tortoise) were observed within the BSA. Of the 16 burrows mapped by biologists, 6 burrows were noted to contain some type of desert tortoise sign (specifically scat or tracks).

The Burrowing Owl is a USFW bird of conservation concern and a protected bird species under the MBTA. On October 10, 2024, the Fish and Game Commission determined that western burrowing owl warrants protection as a candidate species under the California Endangered Species Act (Fish & G. Code, § 2050 et seq.). During the candidacy period, western burrowing owl will be afforded the same protection as threatened and endangered species under the CESA. To determine the presence or absence of burrowing owl, Dudek conducted four protocol burrowing owl surveys within the BSA between March 26 and July 2, 2024 in accordance with Appendix D of the CDFW 2012 Staff Report on Burrowing Owl Mitigation. Although the BSA contains open desert scrub areas that may support burrowing owls, this species was not observed during the focused burrowing owl surveys in 2024. However, numerous burrows that are potentially suitable for nesting were mapped, including burrows mapped during focused surveys for burrowing owl.

California Desert Native Plants

The BRTR includes mapping of 4,562 desert native plants that occur within the BSA, including silver cholla (*Cylindropuntia echinocarpa*), branched pencil cholla (*Cylindropuntia ramosissima*), cottontop cactus (*Echinocactus polycephalus var. polycephalus*), California barrel cactus (*Ferocactus cylindraceus*), beavertail pricklypear (*Opuntia basilaris var. basilaris*), Mojave yucca (*Yucca schidigera*), smoke tree (*Psorothamnus spinosus*), and catclaw acacia (*Senegalia greggii*). No western Joshua trees were observed within the BSA during the desert native plant surveys or the western Joshua tree focused survey.

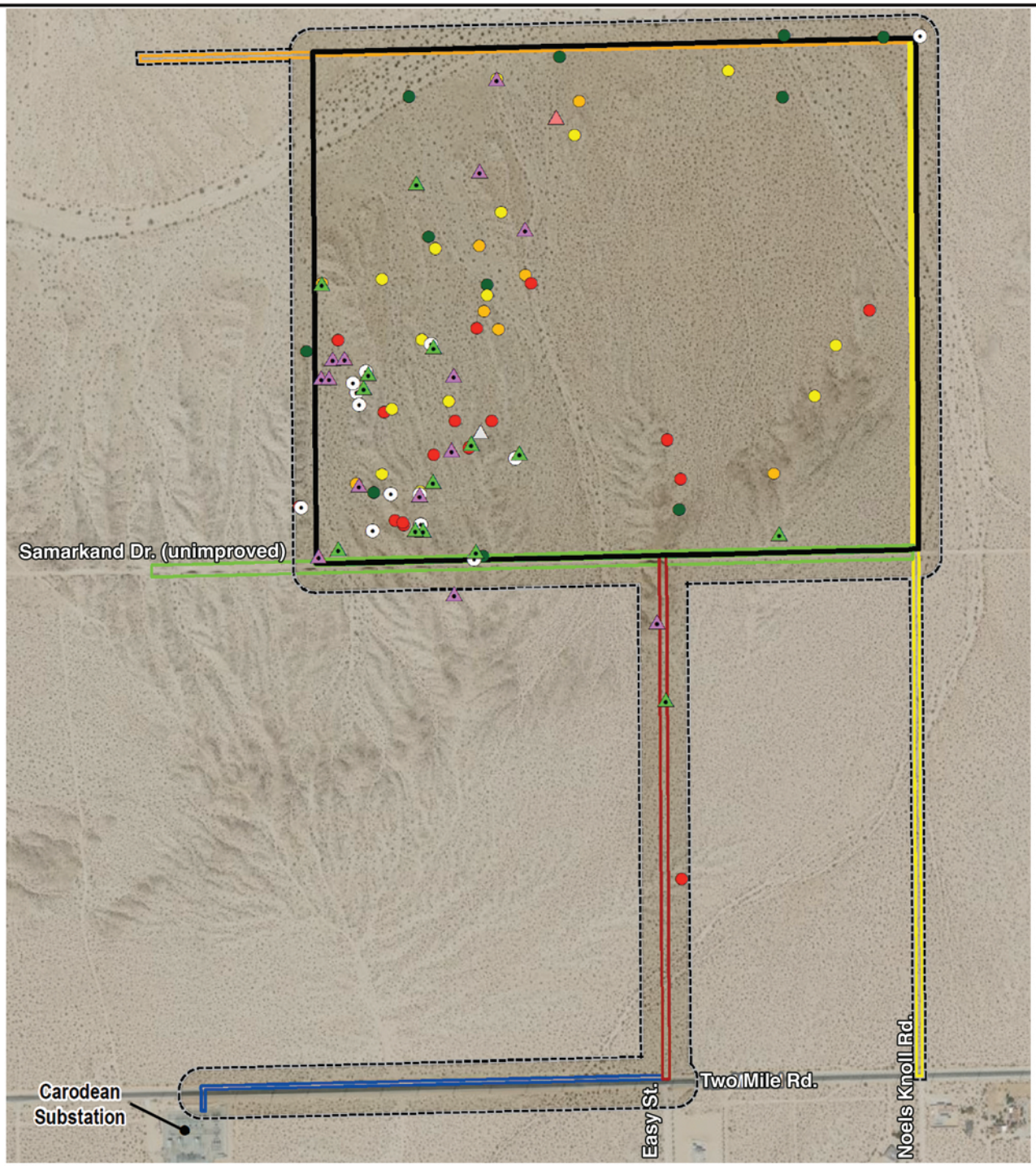
Wildlife Corridors

The Project site is currently undeveloped land located within the established habitat linkage areas for desert tortoise and burrowing owl that would allow for viable populations of smaller terrestrial species and/or species' dispersal movements through the site and the vicinity.

Watersheds and Hydrology

The Mojave River is approximately 70 miles southeast of the site and there are no drainages on site that flow to the Mojave River. The site contains several ephemeral drainages that ultimately end in the various playa lakes, meaning that surface water is confined within the basins.

There are no waters of the US in the City, due to the lack of connection to a navigable waterway. Therefore, the Project would have no impact to federally protected wetlands as defined by Section 404 of the CWA. The results of the aquatic resources delineation concluded there are approximately 7.39 acres of non-wetland waters of the state under the jurisdiction of the RWQCB and streambed or riparian habitat under CDFW jurisdiction within the solar BSA.



Source: Biological Resources Technical Report, Dudek, 01.2025

- Biological Survey Area (BSA)
- Project Boundary
- Dedication for Amboy Road within Project Boundary
- Dedication for Noels Knoll Road within Project Boundary
- Dedication of Samarkand Drive within Project Boundary

Off-Site

- Gen-Tie/Road Alignment
- Gen-Tie Alignment
- Dedication for Amboy Road
- Dedication for Noels Knoll Road
- Dedication for Samarkand Drive

Mojave Desert Tortoise (*Gopherus agassizii*) Observations

- Live Individual
- Sign
- Bone fragment
- Carcass

Burrow Class

- 1 - Currently active and occupied, with desert tortoise or recent sign
- 2 - Good condition, definitely desert tortoise, no evidence of recent use
- 3 - deteriorated condition which included collapsed burrows; definitely desert tortoise
- 4 - good condition; possible desert tortoise
- 5 - deteriorated condition which includes collapsed burrows; possible desert tortoise

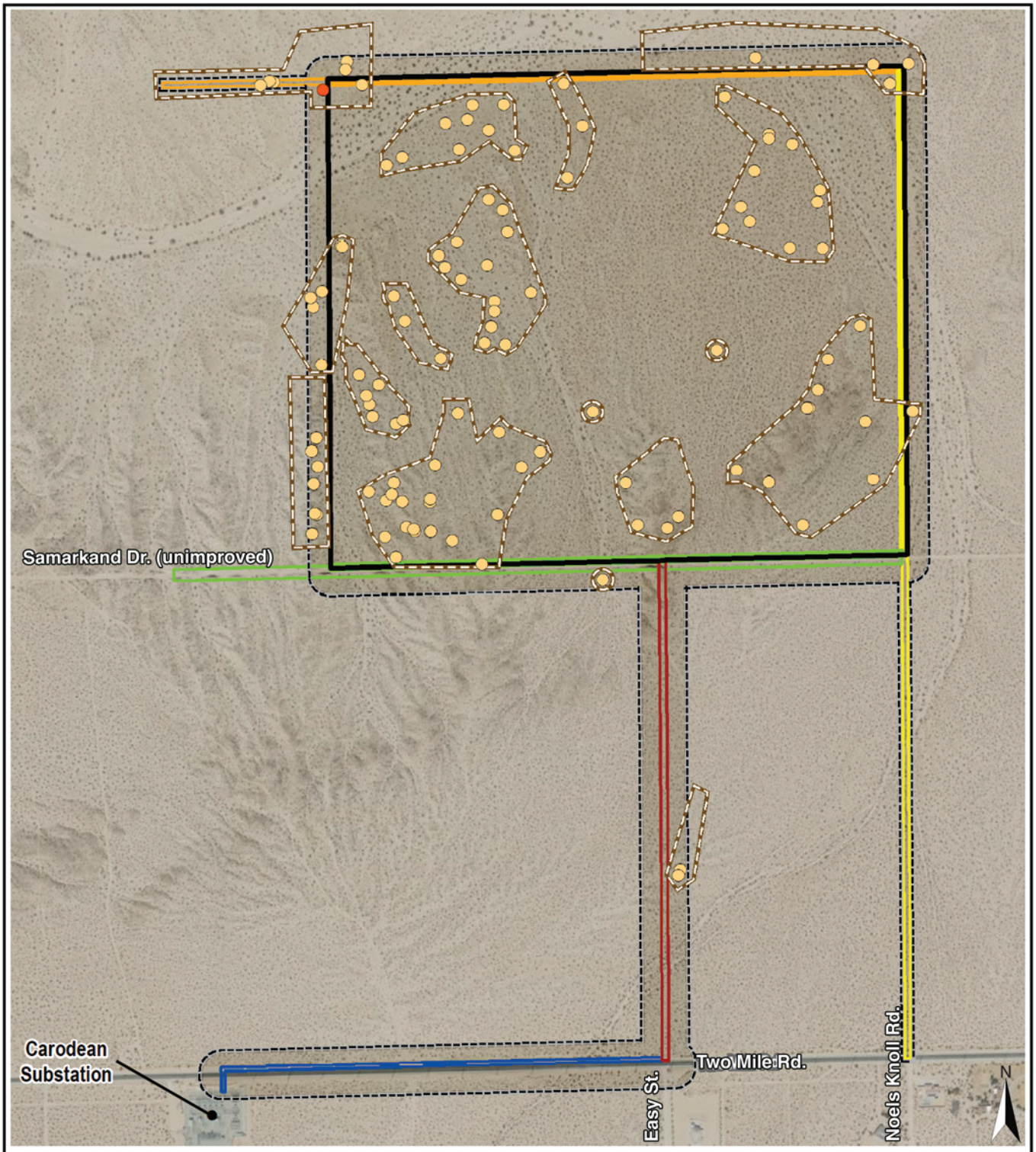
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03.24.25

TERRA NOVA®
PLANNING & RESEARCH, INC.

Desert Tortoise Survey Results
Solar Field Project
Twentynine Palms, California

Exhibit 2.5-1



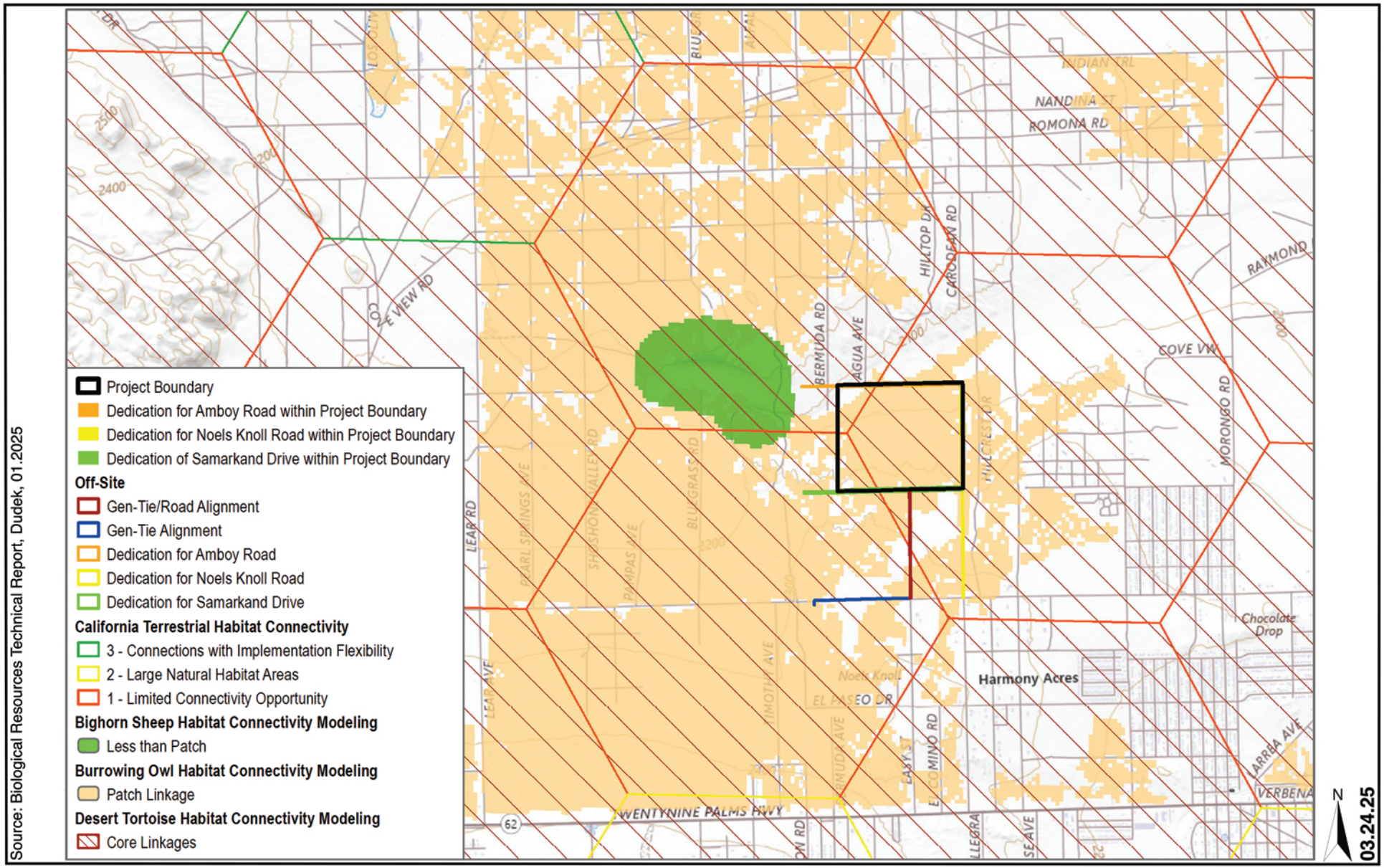
Source: Biological Resources Technical Report, Dudek, 01.2025

03.24.25

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Burrowing Owl Survey Results
Solar Field Project
Twentynine Palms, California

Exhibit
2.5-2



Source: Biological Resources Technical Report, Dudek, 01.2025

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Wildlife Corridor and Habitat Linkage in Proximity to the Project Site
Solar Field Project
Twentynine Palms, California

Exhibit
2.5-3

2.5.6 Project Impacts

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.

Solar Project Impacts

As described in Section 1 of this EIR, the Solar Project includes the site of the solar panel installation, the driveway extending from the solar panel installation to Two Mile Road, and the connection of the solar panels to the SCE substation to the west along Two Mile Road. The following analysis includes all of these areas, and is based on the analysis and conclusions of the BRTR which is supported by a literature review, field surveys, as well as focused surveys, conducted in conformance with set protocol-survey guidelines. Detailed descriptions of the BRTR and survey results are provided in Section 2.5.5 Existing Conditions.

Special Status Plants

The BRTR and 2024 focused plant surveys determined no special status plant species were present on the Solar Project site. Therefore, no direct impacts to special-status plant species are anticipated. However, indirect impacts may occur during construction or from long-term operation and maintenance of the solar facility such as inadvertent spillover impacts, including unintentional clearing, trampling, or grading outside the Solar Project footprint; generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; the release of chemical pollutants; increased invasive plant species that may degrade habitat; and trampling of vegetation and soil compaction by humans, which could affect soil moisture, water penetration, surface flows, and erosion. As a result, the biologist determined that impacts could be significant, and required mitigation.

Implementation of Mitigation Measure BIO-1 (Construction-Related and Operational-Related Indirect Impacts to Biological Resources) would reduce potential indirect impacts during construction to a less-than-significant level by requiring implementation of biological monitoring and a Worker Environmental Awareness Program (WEAP) Training that will cover the special-status resources and mitigation requirements for the Solar Project; delineation of Solar Project boundaries; implementation of standard dust control measures; completion and approval of a stormwater pollution prevention plan (SWPPP); and ensuring pollutants are not discharged. BIO-1 would also reduce potential long-term

(operational) indirect impacts to a less than significant level by requiring measures to ensure runoff is not altered from existing conditions and pollutants are not discharged; application of a native seed mix that does not include species from the California Invasive Plant Council (Cal-IPC) California Invasive Plant Inventory to promote passive restoration of temporary impact areas; and incorporation of perimeter fencing to prevent operations and maintenance staff access to areas outside of the Solar Project that may result in trampling of vegetation and soil compaction of potential off-site habitat for special-status plants. In compliance with BIO-1, a Habitat Restoration Plan, prepared by Dudek in January 2025 and appended in this EIR as Appendix D.3, establishes an action plan to reestablish native vegetation in areas of temporary disturbance as well as provide a native vegetative cover that will reduce dust levels across the facility.

With implementation of BIO-1, impacts to sensitive plant species will be reduced to less than significant levels.

Special Status Wildlife

The BRTR determined a total of 21 special status wildlife species have the potential to occur in the vicinity of the Solar Project site. Of these, three were observed during field surveys (loggerhead shrike, vermillion flycatcher, and desert tortoise) and two (burrowing owl and desert kit fox) were determined to have a moderate potential to occur within the BSA based on habitat present and/or the BSA's proximity to previous known locations in records (see Table 2.5-2).

Birds: The two designated California SSC bird species observed were the loggerhead shrike and vermilion flycatcher. The site also contains suitable habitat and sign for burrowing owl, and habitat for migratory and nesting birds.

Loggerhead Shrike

The Loggerhead Shrike is protected by the CDFW as a listed California Bird Species of Special Concern because of the species' continuous decline in population size. The Loggerhead Shrike was detected within the site, likely due to the open desert habitat consisting of scattered shrubs and trees suitable for nesting and foraging. Due to the amount of suitable nesting and foraging habitat occurring within the surrounding region, direct impacts to 143.9 acres of suitable nesting and foraging habitat for loggerhead shrike would be less than significant. Direct impacts to loggerhead shrike individuals from construction are generally unlikely due to its high mobility and access to adjacent habitat. However, potentially significant direct impacts may occur to nesting Loggerhead Shrike during vegetation removal. The species is also protected under the MBTA. Therefore, in accordance with the federal MBTA, implementation of Mitigation Measure BIO-2 (Pre-Construction Nesting Bird Survey) is mandated to ensure no nesting sites are harmed during the site's construction phase.

Potential short-term or temporary indirect impacts to Loggerhead Shrike resulting from construction activities include the release of chemical pollutants; generation of fugitive dust; adverse effects from noise and vibration, and increased human presence. Potential long-term indirect impacts that could result from operations and maintenance of the solar facility near nesting birds or their suitable habitat would be chemical releases such as oils and grease from vehicles that could degrade habitat; increased invasive plant species that may degrade habitat; and trampling of vegetation and soil compaction by humans, which could affect soil moisture, water penetration, surface flows, and erosion. These potential indirect impacts to Loggerhead Shrike would be potentially significant absent mitigation. Implementation of Mitigation Measure BIO-1 (Construction-Related and Operational-Related Indirect Impacts to Biological Resources) would reduce potential indirect impacts to a less-than-significant level by requiring implementation of biological monitoring and WEAP Training that will cover the special-status resources and mitigation requirements for the Solar Project; delineation of Solar Project boundaries; requiring measures that ensure runoff is not altered from existing conditions and toxicants are not discharged; stipulations that night lighting will not be directed towards open space areas; application of a native seed mix to promote passive restoration of temporary impact areas that does not include species from the California Invasive Plant Council (Cal-IPC) California Invasive Plant Inventory; and prevention of operations and maintenance staff to access areas outside of the project that may result in trampling of vegetation and soil compaction that could degrade habitat. Therefore, less than significant impact to this bird species is anticipated with mitigation incorporated.

Vermilion Flycatcher

Vermilion Flycatcher's designation as a California Bird Species of Special Concern is due to the loss, degradation, and fragmentation of riparian habitat best suited for the species' use. The site contains desert riparian woodland that may be used for nesting and other suitable habitat used for foraging. Given the accessibility of habitat beyond the Solar Project site (see above analysis), the impact to 143.9± acres of suitable foraging habitat for the Vermilion Flycatcher is determined by the BRTR as resulting in a less than a significant impact. This species is not known to nest within the vicinity of the Project site and all potential nesting habitat (i.e., desert-willow–smoketree wash woodland) would be avoided during Solar Project construction and operation. Nonetheless, conformance with Mitigation Measure BIO-2 (Pre-Construction Nesting Bird Survey) is required to ensure any adverse impacts to nesting Vermilion Flycatchers are avoided. Further, any impacts to suitable nesting habitat located within areas associated with construction of future road dedications would be addressed and mitigated in accordance with Mitigation Measure BIO-9 (Sensitive Vegetation Communities and Jurisdictional Resources Mitigation Outside of Solar BSA). Indirect impacts to Vermillion

flycatcher would be similar to those described above for Loggerhead Shrike and the same mitigation measures discussed above would be applicable. As such, less than significant impact to this bird species is anticipated with mitigation incorporated.

Burrowing Owl

The Burrowing Owl is a USFWS Bird Species of Conservation Concern and a candidate for potential listing under the CESA, primarily because of habitat loss and degradation from rapid urbanization, as well as loss of its primary burrow excavators, the ground squirrel, from grazing and agricultural lands. No burrowing owl were detected during the 2024 protocol burrowing owl surveys; however, numerous inactive burrows were observed within the impact area of the BSA. Based upon these surveys, the Solar Project site and BSA includes viable habitat for burrowing owl. Adult burrowing owls can reside below ground and therefore are susceptible to injury and mortality during construction activities. CDFW has determined the following activities have the potential to take burrowing owls, their nests or eggs, or destroy or degrade burrowing owl habitat: grading, disking, cultivation, earthmoving, burrow blockage, heavy equipment compacting and crushing burrow tunnels (CDFG 2012). Therefore, direct impacts from implementation of the Solar Project to burrowing owl individuals and potentially occupied habitat would be significant absent mitigation. Given that burrowing owls are a transient species and have the potential to occupy the site prior to initiation of construction activities, Mitigation Measures BIO-1 and BIO-3 (Pre-Construction Burrowing Owl Surveys and Avoidance) must be implemented to adequately address and minimize any potential for impact. Mitigation Measure BIO-1 lists mitigation for construction-related and operational-related indirect impacts to biological resources, described above, and BIO-3 defines the required pre-construction burrowing owl surveys and avoidance measures pursuant to the MBTA and CDFW Staff Report on Burrowing Owl Mitigation (CDFG 2012). Therefore, direct impacts to burrowing owl would be less than significant with mitigation incorporated. Indirect impacts to Burrowing Owl would be similar to those described above for Loggerhead Shrike and the same mitigation measures discussed above would be applicable.

Migratory and Nesting Birds

The site contains suitable habitat for migratory and nesting birds protected by the California Fish and Game Code Section 3502 and 3503.5 and the federal MBTA. Active nesting sites are defined as "*any nest that is under construction or modification or is supporting eggs, nestlings, or juveniles*". Therefore, potential impacts to nesting sites or any nesting migratory bird during the Solar Project construction would be potentially significant. To avoid potential impacts, a pre-construction nesting survey must be conducted as mandated by Mitigation Measure BIO-2. With implementation of this mitigation measure, impacts to

migratory and nesting birds would be less than significant. Indirect impacts to migratory and nesting birds would be similar to those described above for Loggerhead Shrike and the same mitigation measures discussed above would be applicable.

Lake Effect on Migratory Birds
The probability for migratory bird species to cross the site poses a potential hazard known as the "lake effect". The lake effect is a hypothesis suggesting that PV panels reflect ultraviolet light rays, which confuse birds into misidentifying the solar facility as a body of water. The birds then either collide with the solar panels and are injured or killed or are stranded because they require water to take flight.

The Pacific Flyway is the major north-south route for migratory birds, stretching across the continental Americas. In California, the Pacific Flyway is comprised of multiple paths and focused routes with birds mainly following the coastline. However, there is an interior route that crosses the State's Central Valley and Salton Sea area that is frequented by migratory birds. Although located within the interior route region, no aquatic birds were detected in the vicinity nor were any observed flying over the site.

Based on a study conducted by the California Energy Commission (CEC), aquatic habitat birds were shown to be more common at solar facilities located in an irrigated agricultural landscape than in desert or grassland habitat. In relation to the site, the nearest agricultural land is located within the Coachella Valley, approximately 33 miles south, as well as land surrounding the Colorado River near Blythe, approximately 90 miles east. Given the site's distance to nearby bodies of water and irrigated fields, and the lack of use by migratory birds, the probability for the Solar Project to cause permanent impacts by the lake effect is low to very low.

The BRTR concluded there is no evidence that the Solar Project would result in a reasonably foreseeable "lake effect" to migratory birds, and there are no known special status avian species, particularly water birds such as rails in the area that would be expected to be affected by a potential "lake effect." Therefore, direct and indirect impacts to migratory and special status birds from the "lake effect" would be less than significant.

Mammals: A total of 4 mammal species were observed during the field survey, none of which are identified as special status species. Although not observed, the Desert Kit Fox has a moderate potential to occur within or near the site due to the presence of sparse desert shrub habitats such as creosote scrub where this species usually occurs.

Due to the probability for the Desert Kit Fox to occupy the site, mitigation is required to reduce the probability for significant impacts. Compliance with Mitigation Measure BIO-1, described above, as well as implementation of Mitigation Measure BIO-4, which requires preconstruction surveys for Desert Kit Fox, would ensure the species is not adversely impacted by the Solar Project or off-site improvements. As such, less than significant impacts would occur with incorporated mitigation.

Reptiles: The Mojave desert tortoise is a federally and state listed species, designated as threatened under the Endangered Species Act. The designation comes as a result of ongoing threats including loss, degradation, and fragmentation of habitat by increased urbanization. Suitable habitat for the Mojave desert tortoise is typically on a gently sloping terrain with sandy gravel soils and sparse low-growing shrubs. The soil composition must be friable enough for digging burrows but firm enough that burrows do not collapse. Desert tortoise habitat loss is defined as the complete removal (i.e., grading of the landscape) of food and shelter resources necessary for desert tortoise occupation, and the construction of new roads or solar energy facilities that inhibit desert tortoise movement is considered habitat fragmentation. Buildout of the Solar Project would therefore result in the permanent impact of 142.1± acres and the temporary impact of 1.7± acres of suitable desert scrub, in addition to impacts from off-site improvements.

Dudek biologists conducted focused Mojave desert tortoise surveys of the solar BSA in December 2023 and May 2025. The surveyed area was assessed 4 separate times during each survey, all by foot and in accordance with the Mojave desert tortoise Pre-Project Field Survey Protocol. Results from the surveys confirmed the occurrence of the Mojave desert tortoise through the identification of active and semi-active burrow sites and observation of two Mojave desert tortoise individuals, one adult male and one adult female. Due to the confirmed presence of Mojave desert tortoise, development of the Solar Project has the potential to significantly impact this species if not mitigated.

In addition to Mitigation Measure BIO-1, which passively restores the site to its pre-construction state, Mitigation Measures BIO-5 and BIO-6 are required to mitigate impacts to the Mojave desert tortoise. Implementation of Mitigation Measure BIO-5 (Desert Tortoise Avoidance and Minimization Measures) would require installation of exclusion fencing prior to the initiation of vegetation clearing; removal of tortoises from the area under federal and State permit by the authorized biologist; or allowing individuals to move off site on their own by creating a gap in the fence. Mitigation Measure BIO-5 also requires desert tortoise clearance surveys, trash removal, biological monitors with stop work authority, and speed limit restrictions. Security fencing is to be placed inside of the desert

tortoise exclusion fencing, which must remain in place for the duration of project operations (e.g., excluding all wildlife from entering the project), as recommended by USFWS and CDFW. Implementation of Mitigation Measure BIO-6 (Desert Tortoise Habitat Compensatory Mitigation) would mitigate permanent impacts to occupied desert tortoise habitat at a 1:1 ratio, either through the purchase of land off-site, or the payment of in lieu fees for purchase of habitat. The project applicant shall also be required to obtain an Incidental Take Permit (ITP) from CDFW under Section 2081 of California Fish and Game Code and from the USFWS under Section 10 of the ESA, as directed by Mitigation Measure BIO-6, which would require mitigation consistent with those agencies' requirements under the ESA and CESA. Therefore, direct impacts to Mojave Desert tortoise would be less than significant with mitigation incorporated. Should construction of the road dedications proceed in the future, a total of 8.8 acres of suitable desert scrub habitat would be permanently impacted. Any such potential direct impacts would be addressed and mitigated in accordance with Mitigation Measure BIO-5, Mitigation Measure BIO-6, and Mitigation Measure BIO-7.

Potential short-term or temporary indirect impacts to desert tortoises resulting from construction activities include adverse effects from the generation of fugitive dust, noise and vibration, and increased human presence, including generation of trash that may attract desert tortoise predators (e.g., ravens, domestic dogs). Potential long-term indirect impacts that could result from operations and maintenance of the solar facility near desert tortoise individuals or their suitable habitat located outside the project site would be chemical releases such as oils and grease from vehicles that could degrade habitat; increased invasive plant species that may degrade habitat; and trampling of vegetation and soil compaction by humans, which could affect soil moisture, water penetration, surface flows, and erosion. Implementation of Mitigation Measure BIO-1 will reduce potential indirect impacts during construction and operations to a less-than-significant level. Additionally, implementation of Mitigation Measure BIO-5 will also ensure that no desert tortoises are present within the Project site immediately prior to and during construction.

Solar Field Decommissioning and Restoration

The Solar Project is expected to have an operational life span of 35 years. Natural ecological processes may facilitate the gradual reestablishment of native plants and habitats within and around the solar site, potentially allowing displaced wildlife species to recolonize. Decommissioning would involve the systematic removal of solar panels, mounting structures, and associated infrastructure, followed by site restoration efforts including soil stabilization and native plant revegetation. All decommissioning and restoration activities will be required to adhere to the requirements of all applicable Federal, State and City regulations, in addition to Mitigation Measures BIO-1 (Construction-Related and Operational-

Related Indirect Impacts to Biological Resources), BIO-2 (Pre-Construction Nesting Bird Survey), BIO-3 (Pre-Construction Burrowing Owl Surveys and Avoidance), and BIO-10 (Desert Native Plants Removal Permit). It is presumed that Desert Tortoises and Desert Kit Foxes would not be present on-site due to the required security and exclusionary fencing.

Residential GPA Impacts

Given the uniform environmental condition between the solar site and the southern parcels, it is reasonable to assume similar biological resources and occurrence of protected species identified in the Solar Project-specific BRTR may also occur within those 236± acres, including the 60-acre GPA parcel.

The southern site would maintain residential land use designations with 60-acres subject to a Residential GPA as part of the Solar Project. These proposed changes would allow for residential development on a portion of the site at a higher density than currently permitted under the RL-5 land use, however, no development is proposed at this time. Although the proposed GPA would redistribute residential density by concentrating it on the southern site rather than the northern site (Solar Project), the overall Project would maintain the total Project area's existing development capacity of 119 residences.

Future development of the Residential GPA site and areas not included in the solar BSA has the potential to result in direct and indirect impacts to special-status plants and wildlife, including desert tortoise, burrowing owl, desert kit fox, loggerhead shrike and vermilion flycatcher, as well as migratory and nesting birds. For future development projects, implementation of Mitigation Measure BIO-7 (Focused Surveys, Avoidance, and Mitigation Outside the Solar BSA), as well as other mitigation measures identified below, as applicable, would reduce potential direct impacts to a less than significant level through required focused special-status wildlife surveys, and avoidance and minimization measures to comply with CEQA. Therefore, potential impacts from future development to special-status wildlife species and migratory birds would be assessed at the Project-level as development is proposed, and mitigated to less than significant levels as necessary.

Summary

As evaluated by the Project-specific BRTR, the Project site includes suitable habitat for several local and special status species, as well as migratory birds. Most notably, the Mojave desert tortoise was observed in the solar project site, and the burrowing owl and desert kit fox have a moderate to high probability of occurring within the Project area. Given the occurrence or potential future occurrence of

these and other biological resources within the Project area, implementation of mitigation measures as outlined in Section 2.5.7 are required to ensure impacts are reduced to less than significant levels.

The southern parcel may include the same or additional biological resources than those identified by the Project-specific BRTR. As discussed above, no development within the southern parcel is proposed at this time. A site-specific field survey and protocol-surveys will be conducted as part of the project-level CEQA analysis once a formal residential development, or developments, is proposed within the area. For future development, implementation of Mitigation Measure BIO-7 as well as other mitigation measures identified below, as applicable, would reduce direct impacts to sensitive and special status wildlife and plant species to less than significant levels.

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

Solar Project Impacts

Riparian Habitat
There are no lakes or constant saturated streams within the site. The results of the aquatic resources delineation concluded there are approximately 7.39 acres of non-wetland waters of the state under the jurisdiction of the RWQCB and streambed or riparian habitat subject to CDFW jurisdiction within the solar BSA. Approximately 4.35 acres were designated streambed and 3.04 acres were designated riparian habitat.

The Solar Project has been designed to avoid all impacts to jurisdictional non-wetland waters through construction of prefabricated concrete-support steel bridges. The bridge abutments would occur outside the mapped non-wetland waters, allowing for flows conveyed within the features during storm events to continue to provide pre-project function and value for the site. Additionally, the solar arrays have been set back at a minimum of 25 feet away from the non-wetland waters to ensure impacts are avoided. Therefore, no direct impacts to non-wetland waters, including riparian habitat, would occur as a result of the Solar Project.

Potential short-term or temporary indirect impacts to jurisdictional aquatic resources resulting from construction activities could be potentially significant if these activities encroached into jurisdictional areas. Potential long-term indirect impacts that could result from operations and maintenance of the solar facility

near jurisdictional aquatic resources would be chemical releases such as oils and grease from vehicles that could degrade habitat; increased invasive plant species that may degrade habitat; and trampling of vegetation and soil compaction by humans, which could affect soil moisture, water penetration, surface flows, and erosion. These potential long-term indirect impacts to jurisdictional aquatic resources would be potentially significant absent mitigation. To reduce these indirect impacts, Mitigation Measure BIO-1 (Construction-Related and Operational-Related Indirect Impacts to Biological Resources) and Mitigation Measure BIO-8 (Avoidance and Minimization of Impacts to Potential Jurisdictional Aquatic Resources) are provided below. Solar Project implementation of Mitigation Measure BIO-1, as previously described, would reduce potential indirect impacts during construction and operation of the solar facility to a less-than-significant level. In addition, implementation of Mitigation Measure BIO-8 would require avoidance and minimization measures when ground-disturbing activities occur within 25 feet of waters of the state and/or jurisdictional streambeds. With implementation of Mitigation Measures BIO-1 and BIO-8 impacts to jurisdictional aquatic resources such as riparian habitats would be minimized to less than significant levels.

Natural Communities

The BRTR recorded a total of six (6) vegetation communities and land cover types including Creosote Bush-White Bursage Scrub (includes two scrub alliance communities: white bursage scrub and creosote bush), Cheesebush-Sweetbush Scrub, Desert Willow-Smoketree Wash Woodland, disturbed habitat, and urban and developed land.

Creosote Bush-White Bursage Scrub and Cheesebush-Sweetbush Scrub are considered secure and are not designated sensitive natural communities by CDFW. Desert Willow-Smoketree Wash Woodland, however, is considered a sensitive natural community by CDFW. On site, Desert Willow-Smoketree Wash Woodland occurs in a medium linear patch that stretches diagonally along the northwestern corner of the BSA and a small patch in the northeastern portion of the site.

According to the BRTR, the Solar Project would not directly impact Desert Willow-Smoketree Wash Woodland during operations, because these areas occur outside the development envelope of the Solar Project; therefore, no direct impacts to special-status vegetation communities are anticipated and no avoidance or compensatory mitigation measures are required. Should construction of the road dedications proceed in the future, a total of 0.7 acres of Desert Willow-Smoketree Wash Woodland would be permanently impacted. Any such potential impacts would be addressed and mitigated in accordance with Mitigation Measure BIO-9 (Sensitive Vegetation Communities and Jurisdictional Resources Mitigation Outside of Solar BSA).

Potential short-term or temporary indirect impacts to sensitive vegetation communities (i.e., Desert Willow-Smoketree Wash Woodland) resulting from construction activities could be potentially significant without mitigation. Potential long-term indirect impacts that could result from operations and maintenance of the solar facility near sensitive vegetation communities would be chemical releases such as oils and grease from vehicles that could degrade habitat; increased invasive plant species that may degrade habitat; and trampling of vegetation and soil compaction by humans, which could affect soil moisture, water penetration, surface flows, and erosion. These potential long-term indirect impacts to sensitive vegetation communities would be potentially significant absent mitigation. Project implementation of Mitigation Measure BIO-1 would reduce potential indirect impacts to a less than significant level by requiring implementation of biological monitoring and WEAP Training that will cover the special-status resources and mitigation requirements for the project; delineation of project boundaries; implementation of standard dust control measures; completion and approval of a stormwater pollution prevention plan (SWPPP); and control of pollutants so that they are not discharged into these areas. With implementation of Mitigation Measure BIO-1, the effect of construction-related and long-term indirect impacts to sensitive vegetation communities would be minimized to less than significant levels.

Residential GPA Impacts

Riparian Habitat
A jurisdictional aquatic resources delineation was not conducted outside the solar BSA for the Residential GPA site because development is not proposed at this time. However, the dry wash which occurs in the northeastern portion of the solar BSA extends diagonally through and bisects the eastern parcel, and a drainage which occurs along the west property line of the western parcel extends southerly through the western parcel.

Future development of the Residential GPA site and other off-site improvements not included in the solar BSA has the potential to result in impacts to riparian habitats or other jurisdictional aquatic resources. An aquatic resources delineation must be conducted prior to issuance of any grading permit associated with development outside of the solar BSA (Mitigation Measure BIO-7) in accordance with the methods presented in Section 3.2.4.6, Aquatic Resources Delineation, of the Project BRTR (Appendix D.1) to determine the presence or absence jurisdictional aquatic resources, and whether a future project would impact these resources. If present, and if avoidance is not feasible, direct impacts to jurisdictional aquatic resources from development outside of the solar BSA would be the same as impacts from development within the BSA. Implementation

of Mitigation Measure BIO-9 (Sensitive Vegetation Communities and Jurisdictional Resources Mitigation Outside of Solar BSA) would ensure no-net-loss of jurisdictional aquatic resources of RWQCB and/or CDFW jurisdiction, including riparian habitats, at a minimum of 1:1, with purchase of credits at an approved mitigation bank.

Direct impacts to jurisdictional aquatic resources, if present, would be minimized to less than significant levels with implementation of Mitigation Measure BIO-1, Mitigation Measure BIO-7, and Mitigation Measure BIO-9.

Natural Communities
Biological resource surveys were not conducted outside the solar BSA for the Residential GPA site because development is not proposed at this time. The proposed GPA and rezone of the southern parcel would not result in direct impacts to sensitive natural communities.

The Project's GPA would not in it and of itself have an effect on any riparian habitat or other sensitive natural community. Future development of the Residential GPA site and off-site improvements outside the solar BSA has the potential to result in impacts to sensitive vegetation communities if present. As required by Mitigation Measure BIO-7, vegetation mapping shall be conducted prior to issuance of any grading permit in accordance with the methods presented in Section 3.2.1, Vegetation Community and Land Cover Mapping, of the Project BRTR (Appendix D.1) to determine the presence or absence of sensitive vegetation communities. Direct impacts to sensitive vegetation communities, if present, would be the same as the Solar Project impacts. With implementation of Mitigation Measure BIO-7 and Mitigation Measure BIO-9, direct impacts to sensitive vegetation communities, if present on the Residential GPA site, would be minimized to less than significant levels.

Summary

The BRTR identified one CDFW designated sensitive natural community on-site, Desert Willow-Smoketree Wash Woodland, and 7.39 acres of non-wetland waters of the state subject to the jurisdiction of the RWQCB and streambed or riparian habitat subject to CDFW jurisdiction. The Solar Project shall implement Mitigation Measure BIO-8 (Avoidance and Minimization of Impacts to Potential Jurisdictional Aquatic Resources) which would require avoidance and minimization measures when ground-disturbing activities occur within 25 feet of waters of the state and/or jurisdictional streambeds. Potential short-term or temporary indirect impacts, as well as potential long-term operationally related indirect impacts to sensitive vegetation communities would be mitigated with implementation of Mitigation Measure BIO-1.

The proposed Residential GPA of the southern parcel would not result in direct impacts to riparian habitats or other jurisdictional aquatic resources. For future development, implementation of Mitigation Measure BIO-7 and Mitigation Measure BIO-9 would reduce direct impacts to sensitive vegetation communities, including riparian habitats, if present on the Residential GPA site, to less than significant levels.

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.

Solar Project Impacts

The Solar Project is located within the General Plan's designated Wildlife Linkage Area (Conservation and Open Space Element, Exhibit CO-3). The Project BRTR evaluated the Solar Project site for its value as a habitat linkage corridor for those species identified as occurring or likely to occur within the designated area, as well as others. The site is located within the established habitat linkage areas for desert tortoise and burrowing owl that would also allow for viable populations of smaller terrestrial species and/or species' dispersal movements through the BSA and the immediate vicinity. The BRTR determined that larger mammal species (e.g., bighorn sheep, mountain lion, bobcat) are not anticipated to use the BSA or immediate vicinity due to the openness of the site, which would not provide enough cover for these species (i.e., site lacks escape terrain for bighorn sheep, and rocky outcrops, dense brush, or steep terrain preferred by mountain lion and bobcats). In addition, the BSA's limited connectivity (ACE Rank 1) does not qualify it as a significant regional wildlife corridor, and Project implementation would not disrupt regional migratory patterns given the abundance of surrounding undeveloped land for wildlife passage.

The Project is required to avoid impacts to desert tortoise with implementation of Mitigation Measure BIO-5 (Desert Tortoise Avoidance and Minimization Measures), avoid impacts to burrowing owl as directed by Mitigation Measure BIO-3 (Pre-Construction Burrowing Owl Surveys and Avoidance), and Mitigation Measure BIO-6 (Desert Tortoise Habitat Compensatory Mitigation) would provide mitigation for loss of desert tortoise habitat. Indirect impacts resulting from construction or on-going operation of the solar facility would be mitigated to less than significant levels with implementation of Mitigation Measure BIO-1 (Construction-Related and Operational-Related Indirect Impacts to Biological Resources).

The movement of other small terrestrial species throughout the area in proximity to the subject site is not anticipated to face significant restrictions considering that the Solar Project is located within an expansive undeveloped region of

Twentynine Palms. Therefore, movement by these small species within the area will be possible via access to vacant lands to the north, south, east, and west of the site. Restrictions by the Project's buildout to existing migratory patterns will be low and at no point would it reach a level of significance. Therefore, direct impacts to wildlife movement and corridors would be less than significant.

Residential GPA Impacts

The Residential GPA parcel is currently undeveloped and unoccupied. As shown in Exhibit 1-3 (Solar Project Site Plan), the current proposal does not include the construction of permanent buildings or other modifications of the southern parcel, other than the extension of the Solar Project driveway through the site. The Residential GPA site is located within the General Plan's designated Wildlife Linkage Area (Conservation and Open Space Element, Exhibit CO-3).

The land required for the Residential GPA is currently designated for residential development, and would thus be expected to include fencing around parcels of 1 or 5 acres in size. Future development of the parcel for residential use may gradually decrease the ease by which wildlife currently moves throughout the area. Under the proposed GPA, full buildout of the southern parcel would allow the construction of 119 dwelling units, which may include paved roadways, driveways, sidewalks, and fencing for property boundaries or private yard space at a greater intensity than what would currently be allowed on the 60 acres currently designated RL-5 subject to the Residential GPA. These development features would somewhat increase the physical obstructions limiting the movement of species currently utilizing the land as a wildlife corridor. Potential impacts from the residential development will depend largely on a specific project's layout, number of dwelling units, and acreage of undeveloped open desert terrain. The subdivision required for the Residential GPA has the potential to result in significant impacts related to migratory species, and require mitigation. Per Mitigation Measure BIO-7, a biological technical report will be prepared for future development of the southern site to evaluate the area's value as a wildlife corridor, identify species within the area including special status species, and determine impacts to the corridor by the development. If necessary, the report will draft actionable recommendations which the project-level CEQA document will incorporate as mitigation measures, as a condition for approval. Therefore, any adverse effects by the parcel's use for housing will be addressed and mitigated, if required.

As noted above, the Project does not propose development of the southern parcel or supporting infrastructure at this time. Future impacts will be analyzed once a formal residential project is proposed per Mitigation Measure BIO-7. As currently proposed, the Residential GPA would not in it and of itself cause

disruptions or diminish the site's value as a wildlife corridor. Therefore, impacts will be less than significant with mitigation.

Summary

The Project site was identified as being located within the established habitat linkage area defined by the General Plan, including areas for desert tortoise and burrowing owl. The site is a region used by common and special status species, who currently access the site without any obstructions. The BRTR determined restrictions by the Project's buildout to existing migratory patterns would be less than significant. The Project is required to avoid impacts to specific wildlife species with implementation of Mitigation Measure BIO-3, Mitigation Measure BIO-5, and Mitigation Measure BIO-6. Indirect impacts resulting from construction or on-going operation of the Solar Project would be mitigated to less than significant levels with implementation of Mitigation Measure BIO-1. As such, the Project would result in less than significant impacts with mitigation incorporated.

No changes to the physical composition of the southern parcel are proposed immediately, but development at a higher intensity could occur in the future. These changes could alter or reduce the southern parcel's value or use as a wildlife corridor. Future impacts will be analyzed once a formal residential project is proposed, as required per Mitigation Measure BIO-7. No immediate direct impacts will occur as a result of the Residential GPA.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Solar Project Impacts

The site is not located within a Biological Habitat Overlay District (PR-BH) and does not require preservation per Twentynine Palms Municipal Code Section 19.26.020. A total of 4,562 desert native plants were observed within the BSA (including 3,088 within the Solar Project footprint) during the focused desert native plant survey of the solar site, including silver cholla, branched pencil cholla, cottontop cactus, California barrel cactus, beavertail, pricklypear, Mojave yucca, smoke tree, and catclaw acacia. Potential impacts to existing desert native plants will be mitigated to less than significant levels by Mitigation Measure BIO-10 (Desert Native Plants Removal Permit), which requires that the applicant secure a permit from the City in compliance with the Desert Native Plants Act. Potential impacts to riparian habitats and jurisdictional waters would be reduced to less than significant impacts with implementation of Mitigation Measure BIO-9 (Sensitive Vegetation Communities and Jurisdictional Resources Mitigation Outside of Solar BSA). Therefore, the Project would not conflict with local policies or ordinances

protecting biological resources, and impacts are less than significant. Should construction of the road dedications proceed in the future, the area subject to the road dedications includes a total of 146 desert native plants. Any potential impacts to such plants would be addressed and mitigated in accordance with Mitigation Measure BIO-7 (if the survey requires updating) and Mitigation Measure BIO-10.

Residential GPA Impacts

The Residential GPA does not propose changes to local policies or ordinances protecting biological resources. The site is not located within a Biological Habitat Overlay District (PR-BH) and does not require preservation per Twentynine Palms Municipal Code Section 19.26.020.

Although the Residential GPA site has not been surveyed, its character and plant distribution can be expected to be similar to that of the Solar Project site. Per Mitigation Measure BIO-7, a biological technical report will be prepared to assess the presence of desert native plants and, similar to the Solar Project, future development would be required to submit an application and pay applicable fees to the City of Twentynine Palms for removal of protected native desert plants as required by Mitigation Measure BIO-10 (Desert Native Plants Removal Permit). Therefore, the Residential GPA would not conflict with local policies or ordinances protecting biological resources, and impacts are less than significant.

Summary

Neither the Solar Project nor the Residential GPA would conflict with local policies or ordinances protecting biological resources with the implementation of mitigation. All development, proposed and future, would be required to submit an application and pay applicable fees to the City of Twentynine Palms for removal of protected native desert plants as required by Mitigation Measure BIO-10 (Desert Native Plants Removal Permit). Potential impacts to riparian and jurisdictional habitats would be reduced to less than significant levels with implementation of Mitigation Measure BIO-9 (Sensitive Vegetation Communities and Jurisdictional Resources Mitigation Outside of Solar BSA). The site is not located within a Biological Habitat Overlay District (PR-BH) and thus does not require preservation per Twentynine Palms Municipal Code Section 19.26.020. Overall, the Project would not conflict with local policies or ordinances protecting biological resources, and impacts are less than significant with the implementation of mitigation.

2.5.7 Mitigation Measures

The following measures were derived from the Project-specific BRTR to preserve and protect biological resources within the Project site, off-site area, and future roadway dedication.

BIO-1 Construction-Related and Operational-Related Indirect Impacts to Biological Resources.

For each phase of project implementation, including solar decommissioning activities, suitable habitat for special-status species (i.e., all undeveloped land or re-naturalized land within the project site) with potential to occur in the project, the project's Applicant/Developer shall include the following in the construction contractor's plans and specifications to address indirect construction-related impacts to special-status species:

- Biological Monitoring. A qualified project biologist shall conduct monthly checks throughout the duration of project construction in order to inspect construction fencing, ensure that practicable measures are being employed to avoid incidental disturbance of habitat, species of concern, and other sensitive biological resources outside the project footprint, and ensure that all applicable requirements from the mitigation measures are being upheld.
- Worker Environmental Awareness Training. Prior to grading, a pre-construction meeting shall be required that includes a training session for project personnel by the biological monitor. The training shall include (1) a description of the species of concern and its habitats; (2) the general provisions of the applicable regulations pertaining to biological resources, including the Endangered Species Act and the Clean Water Act; (3) the need to adhere to the provisions of the Endangered Species Act, the Clean Water Act, and other applicable regulations; (4) the penalties associated with violating the provisions of the Endangered Species Act, Clean Water Act, and other applicable regulations; (5) the general measures that are being implemented to conserve the species of concern as they relate to the project; and (6) the access routes to and from disturbance area boundaries within which the project activities must be accomplished. Additionally, the training shall include the measures and mitigation requirements for the applicable resources. Copies of the mitigation measures and any required permits from the resource agencies shall be made available to

construction personnel. The video may be recorded so that multiple personnel are able to watch the material. The training shall be provided in alternate languages, as needed. In addition, operations and maintenance personnel shall be required to watch the recorded training prior to entering the Project during operations, with the only exception being emergency situations. Copies of the mitigation measures and any required permits from the resource agencies shall be made available to operations and maintenance personnel.

- Delineation of Property Boundaries. Before beginning activities that would cause impacts, the contractor shall, in consultation with the biological monitor, clearly delineate the boundaries with fencing, stakes, or flags, consistent with the grading plan, within which the impacts will take place. All impacts outside the fenced, staked, or flagged areas shall be avoided, and all fencing, stakes, and flags shall be maintained until the completion of impacts in that area. In addition, any avoided environmental resources shall be clearly delineated. Prior to implementing construction activities, the biological monitor shall verify that the flagging clearly delineates the construction limits and any sensitive environmental resources to be avoided.
- Standard Dust Control Measures. Standard dust control measures as per the Mojave Desert Air Quality Management District shall be implemented to reduce dust impacts on nearby conserved lands, plants, and wildlife. Measures include controlling speed to 15 mph or less on unpaved roads, replacing ground cover in disturbed areas as quickly as possible, frequently watering active work sites, installation of shaker plates, and suspending excavation and grading operations during periods of high winds.
- Stormwater Pollution Prevention Plan. Prior to issuance of a grading permit for construction, the applicant shall submit a stormwater pollution prevention plan (SWPPP) to the City of Twentynine Palms that specifies best management practices to prevent all construction pollutants from contacting stormwater, with the intent of keeping sedimentation or any other pollutants from moving off site and into receiving waters. The requirements of the SWPPP shall be incorporated into design specifications and construction contracts.
- Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. Hazardous spills and contaminated soil shall be immediately cleaned up and the

contaminated soil shall be properly handled or disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated staging area. Staging areas shall not be located within the project's avoidance areas.

- Wildlife Hazards. The following measures shall be implemented to ensure that wildlife do not become trapped, entangled, injured, or poisoned by construction activities:
    - Structures in which wildlife may become trapped (e.g., open pipes, pits, trenches, etc.) shall be tightly covered at the end of each work day. If covering the structure is not possible, an escape ramp shall be provided to allow any wildlife that falls in to safely escape.
    - Debris piles, construction materials, equipment, and other items that may be used as wildlife refuge shall be inspected for wildlife at the start of each work day and prior to disturbance. If wildlife is discovered, it shall either be moved out of harm's way by a qualified biologist or allowed to move off of the study area on its own under supervision by a qualified biologist.
    - Nets and mesh shall be made of loose-weave material that is not fused at the intersections of the weave, as nets with welded weaves present an entanglement risk.
    - Toxic materials and garbage shall be removed from the work site and safely stored or disposed of at the end of each work day.
- Invasive Weeds. The project applicant shall be required to replant all temporarily impacted areas with native plants and remove invasive plants. The species proposed for replanting shall not include any plants found on the most recent version of the Cal-IPC California Invasive Plant Inventory (http://www.cal-ipc.org/ip/inventory/index.php).
- Noise. Proposed noise-generating land uses affecting suitable habitat for special-status species shall incorporate setbacks, berms, or walls to minimize the effects of noise on resources pursuant to applicable rules, regulations, and guidelines related to land use noise standards. For planning purposes, wildlife are not expected to be subjected to noise that would exceed rural residential noise standards.
- Fencing. The solar array site shall include a 7-foot-high perimeter fence upon completion of construction and through the duration of operation to minimize the impact on sensitive or special-status biological resources occurring adjacent to the site.

- Lighting. All construction activities shall be conducted during the daytime, and lights shall not be kept on overnight in the construction area. While night lighting is not currently proposed, if it is required for security purposes during construction activities or operational activities, all exterior lighting along undeveloped land shall be fully shielded and directed downward in a manner that will prevent light spillage or glare into the adjacent avoidance areas. As applicable, emergency maintenance work on the solar arrays at night would be performed using battery or gas-powered light stands that would be directed to the active work area.

BIO-2 Pre-Construction Nesting Bird Survey.

If construction or solar decommissioning activities must occur during the migratory bird nesting season (typically January 1 through July 31), an avian nesting survey of the Project site and within 500 feet of all impact areas must be conducted to determine the presence/absence of fully protected species, protected migratory birds, and active nests. The avian nesting survey shall be performed by a qualified wildlife biologist within 72 hours prior to the start of construction in accordance with the Migratory Bird Treaty Act and California Fish and Game Code Section 3503, 3503.5, and 3513.

If an active bird nest is found, the nest shall be flagged and mapped on the construction plans along with appropriate buffer established around the nest, which shall be determined by the biologist based on the species' sensitivity to disturbance (typically 300 feet for passerines and 500 feet for raptors and special status species). The nest area shall be avoided until the nest is vacated, and the juveniles have fledged. The nest area shall be demarcated in the field by flagging and stakes or construction fencing. On-site construction monitoring shall also be conducted when an active nest buffer is in place. No project activities may encroach into established buffers without the consent of a monitoring biologist. The buffer shall remain in place until it is determined the nestlings have fledged and the nest is no longer considered active.

BIO-3 Pre-Construction Burrowing Owl Surveys and Avoidance

One pre-construction Burrowing Owl survey shall be completed no more than 14 days before initiation of site preparation or grading or solar decommissioning activities and a second survey shall be completed within 24 hours of the start of site preparation or grading or decommissioning activities. If ground-disturbing activities are delayed or suspended for more than 30 days after the

preconstruction surveys, the Project site shall be resurveyed. Surveys for Burrowing Owls shall be conducted in accordance with protocols established in the Staff Report on Burrowing Owl Mitigation in 2012 or current version.

If Burrowing Owls are detected, and if impacts to Burrowing Owls cannot be feasibly avoided, the Project applicant will consult with CDFW and obtain appropriate take authorization from the CDFW through the CESA Incidental Take Permit (ITP) process. If requiring an ITP, mitigation for direct impacts to Burrowing Owl shall be fulfilled through compensatory mitigation at a minimum 1:1 habitat replacement of equal or better functions and values to those impacted by the Project, or as otherwise determined through the ITP process.

BIO-4 Pre-Construction Survey for Desert Kit Fox and Avoidance

A pre-construction survey for Desert Kit Fox shall be conducted within 10 days before initiation of site preparation or grading activities to determine the presence/absence of Desert Kit Fox.

If the Desert Kit Fox is detected, a Desert Kit Fox Relocation and Mitigation Plan shall be prepared by a qualified biologist in consultation with CDFW, and shall be implemented including protective measures such as the establishment of no disturbance buffer zones for active den and active natal den. A report to evaluate the success of the relocation efforts and any subsequent re-occupation, if applicable, shall be provided at the end of the construction period. Data shall be readily available to the CDFW upon request. If an injured, sick, or dead desert kit fox is detected on any area associated with the project, the designated CDFW personnel at both the Ontario office and the Wildlife Investigation Lab shall be notified as described within the Desert Kit Fox Relocation and Mitigation Plan.

BIO-5 Desert Tortoise Avoidance and Minimization Measures.

Relocation and/or take of a desert tortoise may not occur without consultation with the USFWS and CDFW. The phrases "authorized biologist" and "desert tortoise monitor," as used herein, are taken from the most up to date USFWS guidance (USFWS 2009), and the definitions, roles, and responsibilities of each will be adhered to during construction. Also, in accordance with guidance in USFWS (2019), if tortoises or fresh sign are observed during project construction, all activities that could result in take of desert tortoise

shall cease immediately until an authorized biologist can confirm that no desert tortoise is present or the desert tortoise moves off the site on its own under the supervision of a qualified biologist.

Desert tortoise exclusion fencing shall be installed around all construction areas prior to the initiation of vegetation clearing. Once the area is fenced, desert tortoises shall be removed from the area by the authorized biologist if the appropriate state and federal permits have been obtained or be allowed to move off site on their own by creating a gap in the fence under the supervision of a qualified biologist. Note that they cannot be "harassed" or otherwise directly encouraged to move off site without obtaining a federal take permit (or as directly authorized/directed by the USFWS and CDFW, if applicable). If the desert tortoise is allowed to move off site on its own, the gap in the exclusion fence will be closed once the tortoise has left the fenced area. After desert tortoise is no longer inside the fence, the fence shall be maintained in place until construction is completed. The purpose of the fence is to preclude all desert tortoises from the construction impact zone, including desert tortoises that may try to get back to their on-site burrow(s). A minimum of two tortoise-free pre-construction clearance survey passes conducted by the authorized biologist or desert tortoise monitor, after exclusion fencing has been installed, are required to ensure that desert tortoises are no longer on the site and construction may commence. If the fence fails or is subject to gaps then two more tortoise-free survey passes must occur before work can resume.

The fence shall be constructed of 0.5-inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches shall be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked at least weekly during construction by the authorized biologist or desert tortoise monitor, and maintained when necessary, by the project proponent to ensure its integrity. Access points will be protected by installing the latest specification entrance gates/grates/etc. In all cases, the protection system will not include gaps sufficient for even the smallest hatchling to pass through. Common raven perching deterrents shall be installed as part of the fence construction. If unsupervised gaps are detected, then pre-construction clearance surveys will be required after remediation and prior to resumption of work.

All project-related facilities and construction-related areas, such as staging areas and personnel parking areas, other than the access road and Two Mile Road discussed below, shall occur within the fenced area. All related infrastructure shall also remain within the fenced area.

As part of the Worker Environmental Awareness Program (WEAP) training, all workers shall be informed to check beneath any parked vehicle immediately prior to moving the vehicle while in desert tortoise habitat outside fenced impact areas. After the desert tortoise-exclusion fence has been installed, all personal vehicles and construction equipment shall be parked inside the fenced area. Vehicular travel outside of established roads (including Samarkand Road, Sunrise Road, and private roads (once constructed) prior to removal of desert tortoises shall be prohibited. If a desert tortoise is found beneath a vehicle, the authorized biologist shall be contacted to move it from harm's way, if the appropriate state and federal permits have been obtained. Alternatively, the vehicle shall not be moved until the desert tortoise has left of its own accord under supervision of a qualified biologist. The authorized biologist shall be responsible for taking appropriate precautions to ensure that any desert tortoise moved in this manner is not exposed to temperature extremes that could be harmful to the animal.

The desert tortoise exclusion fence during construction shall have as part of its design either a desert-tortoise-proof cattle guard, desert tortoise exclusion gate, exclusion grate, or a breakaway portion of fence that can be opened and closed to allow vehicle access. The gate or modified fence shall remain closed at all times during construction except to allow vehicles to enter or leave the site. This measure may be modified if the desert tortoise monitor, based on surveys of surrounding areas, determines that there is little or no likelihood of desert tortoises entering the site through the opening. If the authorized biologist determines that the gate may be left open and subsequently finds that a desert tortoise has entered the construction area through that opening, a gate or modified fence shall be installed and kept closed after desert tortoise has left the site.

Prior to installing the fence, the authorized biologist shall survey the area along which the fence will be installed, with the goal of establishing a fenced area that allows for as many desert tortoise burrows to remain outside the fenced area while still accommodating project construction. The authorized biologist shall

consider the direction of the burrow and know that burrows may be 30 to 40 feet long. So, not only the burrow opening, but also the burrow's end, shall be considered and excluded if the fence line is to be altered. Any desert tortoise burrows found within the proposed fence line that cannot be avoided shall be hand excavated by the authorized biologist prior to clearing of the fence line or installation of the fence. Burrow excavation procedures are discussed in Desert Tortoise Council (1999). The authorized biologist or desert tortoise monitors shall remain on-site to monitor the installation of the fence.

After installing the fence, and before any other activities occur within the fenced area, the authorized biologist shall survey the site for desert tortoises. If possible, the surveys shall occur immediately after installation of the fence and several days prior to brushing or grading activities. The site shall be searched at least two consecutive times with a negative survey result, meaning if the site is searched and desert tortoise are found, two additional surveys must be completed until the result is negative. Burrows shall either be excavated as they are found or flagged for excavation later. Each burrow shall also be carefully checked for viable desert tortoise eggs. If found, the authorized biologist shall have a plan for disposition of these eggs outside the impact zone but within the adjacent area and move the eggs in such a way that the viability of the eggs is not adversely affected by their movement (Desert Tortoise Council 1999). Handling of desert tortoise eggs would require consultation with CDFW and the USFWS. Security fencing shall be placed inside of the desert tortoise exclusion fencing, which shall remain in place for the duration of project operations (e.g., excluding all wildlife from entering the Project), as recommended by USFWS and CDFW (Lalumiere, pers. comm. 2025).

Prior to conducting vegetation clearing or grading activities in desert tortoise habitat outside permanently fenced areas of the project site (i.e., off-site access road, gen-tie alignment, and substation), the authorized biologist or desert tortoise monitor under the supervision of an authorized biologist will survey the access road impact area immediately prior to conducting these activities to ensure that no desert tortoises are present. Because of the linear nature of the access road, the applicant may conduct surveys at any time of year but shall avoid impacts to potential and known desert tortoise burrows, in addition to avoiding impacts to desert tortoises. Potential burrows will be buffered by 30 feet unless they can be shown to be unoccupied, or the authorized biologist believes a smaller buffer is

appropriate in order to protect underground burrows. Examples of situations where smaller buffers may be appropriate may include the following: burrow entrances are obviously oriented away from the impact area; the type of activity near the burrow is not likely to impact desert tortoise (e.g., the activity will not have the potential to crush a burrow); the burrow is adjacent to an existing thoroughfare that receives vehicle use already and the proposed activity is similar in nature; etc. Temporary desert tortoise exclusion fencing will be installed along the access road. Once construction along the access road is completed, the desert tortoise exclusion fencing shall be removed. No vehicle or equipment parked outside any of the fenced areas will be moved prior to inspecting the ground beneath the vehicle or equipment for the presence of desert tortoise. If present, the desert tortoise will be left to move on its own under supervision by a qualified biologist.

The WEAP required under Mitigation Measure BIO-1 shall also include the following information and requirements specific to protection of desert tortoise:

- A description of the desert tortoise, including adults and juveniles
- Color photographs of desert tortoise
- Protections to the desert tortoise under the ESA and CESA and potential penalties for violating the ESA and CESA
- Measures implemented under the project to protect desert tortoises and to conserve their habitat
- The requirement that all workers shall check beneath any parked vehicle immediately prior to moving the vehicle while in desert tortoise habitat outside fenced impact areas and what to do if a desert tortoise is found
- Information for contacting the authorized biologist or desert tortoise monitor in case personnel observe one or more desert tortoises on the project site
- All trash that may attract desert tortoise predators (e.g., ravens, domestic dogs) shall be removed from the work site at the end of each day.
- If desert tortoises occur in a work area and will not leave of their own accord, then it will be necessary to coordinate with the USFWS and CDFW. Physical relocation of a desert tortoise may not occur unless approved by the wildlife agencies, and this may require authorizations pursuant to Incidental Take Permits from the USFWS and CDFW.

- The biological monitors shall have the authority to stop work at all times, if proper avoidance measures are not in place or project activities may potentially result in impacts to desert tortoises.
- A speed limit of 15 mph shall be maintained at all times except on county/state roads.
- Work shall be restricted to daylight hours at all times when working within or adjacent to desert tortoise habitat, except in an emergency, to avoid vehicle traffic when tortoise may be on access roads at times of poor visibility.

This mitigation measure would also be applied in the event of future construction of roads subject to the future road dedications.

BIO-6 Desert Tortoise Habitat Compensatory Mitigation.
The project applicant shall implement habitat mitigation for 142.1± acres of permanent impacts to occupied desert tortoise habitat. Impacts are to be compensated at a minimum 1:1 ratio either through one or a combination of the following:

Option 1: Purchase of off-site habitat mitigation lands that contain suitable habitat for desert tortoise.

Option 2: Purchase of mitigation credits at a mitigation bank for desert tortoise.

The applicant shall submit a document outlining the permanent impacts to desert tortoise habitat, along with a compensatory mitigation plan, to the USFWS and CDFW for review and approval. The Project applicant shall also be required to obtain an Incidental Take Permit (ITP) from the CDFW and USFWS where the ITP includes an analysis of whether Project impacts would jeopardize the continued existence of the species, provide suitable avoidance and minimization measures to reduce potential impacts, and adequately mitigate through conservation or mitigation banking. Unavoidable impacts to occupied suitable habitat shall be compensated at a minimum of 1:1, as described above, in addition to implementing all other measures and condition of the ITPs. This mitigation measure would also be applied in the event of future construction of roads subject to the future road dedications.

BIO-7 Focused Surveys, Avoidance and Mitigation Outside of Solar BSA
Development proposed for any portion of the site outside the Solar Project BSA shall be required to conduct the following surveys prior to

issuance of grading permits: a general biological reconnaissance survey, including vegetation mapping, special-status plant survey, western Joshua Tree focused survey, desert native plant survey, desert tortoise (Gopherus agassizii) protocol-level survey, burrowing owl (Athene cunicularia) protocol-level survey, and an aquatic resources delineation. Focused surveys shall be conducted in accordance with the methods described in Section 3.2.4, Special-Status and Regulated Resources, of the project-specific Biological Resources Technical Report.

If the results of the general biological reconnaissance survey determine there are biological resources that are not evaluated in the Biological Resources Technical Report, then additional CEQA documentation would be required by the project applicant. If the general biological reconnaissance survey determines there are sensitive natural vegetation communities, and if jurisdictional aquatic resources, and/or desert native plants, desert tortoise, or burrowing owl are determined present, then the following applicable mitigation measures from Section 7 of the Project BRTR referenced below shall be implemented: Mitigation Measure BIO-2 (Construction-Related and Operational-Related Indirect Impacts to Biological Resources), Mitigation Measure BIO-3 (Desert Tortoise Avoidance and Minimization Measures), Mitigation Measure BIO-4 (Desert Tortoise Habitat Compensatory Mitigation), Mitigation Measure BIO-5 (Pre-Construction Burrowing Owl Surveys and Avoidance), Mitigation Measure BIO-6 (Pre-Construction Survey for Desert Kit Fox and Avoidance), Mitigation Measure BIO-7 (Pre-Construction Nesting Bird Survey), Mitigation Measure BIO-8 (Sensitive Vegetation Communities and Jurisdictional Resources Mitigation), Mitigation Measure BIO-9 (Avoidance and Minimization to Potential Jurisdictional Aquatic Resources), and Mitigation Measure BIO-10 (Desert Native Plants Removal Permit).

Should special-status plant species and/or western Joshua Tree be determined present, then the following additional mitigation measures shall be implemented:

<u>Special-Status Plants</u>
Impacts to special-status plant occurrences shall be avoided to the greatest extent possible and minimized where avoidance is not feasible. Where impacts to special-status plant species cannot be avoided, mitigation is required. For direct impacts to special-status

plant species, one or a combination of the following strategies shall be implemented:

- *Avoidance and Minimization*. Impacts to special-status plant occurrences shall be avoided to the greatest extent possible and minimized where avoidance is not feasible.
- *Salvage*. If a qualified ecologist determines that impacts to special-status plants cannot be avoided and it is feasible to effectively salvage the plants, that ecologist shall develop a restoration and mitigation plan based on the life history of the species impacted, as necessary, to mitigate project impacts. The plan shall include, at minimum, (a) collection/salvage measures for plants and/or seed banks to retain intact soil conditions and maximize success likelihood; (b) details regarding storage of plants and/or seed banks; (c) location of the proposed recipient site and detailed site preparation and plant introduction techniques details for top soil storage, as applicable; (d) time of year that the salvage and replanting or seeding shall occur and the methodology of the replanting; (e) a description of the irrigation, if used; (f) success criteria; and (g) a detailed monitoring program, commensurate with the plan's goals.

Western Joshua Tree
If impacts to western Joshua tree cannot be avoided, mitigation is required. If avoidance is not feasible, and construction will result in direct removal of western Joshua tree, a Westen Joshua Tree Conservation Act Incidental Take Permit or a Section 2081 Incidental Take Permit from CDFW shall be required prior to construction.

BIO-8 Avoidance and Minimization of Impacts to Potential Jurisdictional Aquatic Resources.
The following avoidance and minimization measures would be implemented when ground-disturbing activities occur within 25 feet of waters of the state and/or jurisdictional streambeds (i.e., jurisdictional aquatic resources):

- All jurisdictional aquatic resources within 25 feet of project activities shall be fenced or flagged as environmentally sensitive areas prior to any ground disturbance.
- A biological monitor shall be present during construction activities within 25 feet of jurisdictional aquatic resources to ensure avoidance.

- Best Management Practices shall be implemented to avoid indirect impacts to jurisdictional waters, including:
  - Water containing mud, silt, or other pollutants from grading or other activities shall not be allowed to enter jurisdictional aquatic resources or be placed in locations that may be subjected to high storm flows.
  - Spoil sites shall not be located within jurisdictional aquatic resources or in locations that may be subject to high storm flows, where spoils might be washed into drainages.
  - Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous, resulting from project-related activities, shall be prevented from entering jurisdictional aquatic resources.
  - Equipment maintenance shall occur outside jurisdictional aquatic resources and in such a manner that no petroleum products or other pollutants from the equipment enters on- or off-site state-jurisdictional aquatic resources either directly or indirectly.

BIO-9 Sensitive Vegetation Communities and Jurisdictional Resources Mitigation Outside of Solar BSA

If the Residential GPA site and future road dedications are constructed, prior to issuance of a grading permit, permanent impacts to the sensitive vegetation community (e.g., desert willow–smoketree wash woodland), will be mitigated at not less than a 1:1 ratio through preservation of the same vegetation community either on site, off site, or through a CDFW approved mitigation bank. Areas outside the solar BSA shall also mitigate to ensure no-net-loss of jurisdictional aquatic resources at a minimum of 1:1 with purchase of credits at an approved mitigation bank including Regional Water Quality Control Board/California Department of Fish and Wildlife jurisdiction. Mitigation shall be completed through use of a mitigation bank (e.g., Black Mountain Conservation Bank) or other applicant-sponsored mitigation either on site or off site. Final mitigation ratios and credits shall be determined in consultation with the resource agencies but will be no less than a 1:1 mitigation ratio. Should applicant-sponsored mitigation be implemented, a Habitat Mitigation and Monitoring Plan (HMMP) shall be prepared. The HMMP shall include a conceptual planting plan including planting zones, grading, and irrigation, as applicable; a conceptual planting plant palette; a long-term maintenance and monitoring plan; annual

reporting requirements; and proposed success criteria. Any applicant-sponsored mitigation shall be conserved and managed in perpetuity.

Best management practices shall be implemented to avoid any indirect impacts on jurisdictional waters and sensitive vegetation communities as described in Mitigation Measure BIO-8 (Avoidance and Minimization of Impacts to Potential Jurisdictional Aquatic Resources).

BIO-10 Desert Native Plants Removal Permit

Prior to issuance of grading permits or solar decommissioning activities, the Project applicant shall submit an application and applicable fee paid to City of Twentynine Palms for removal of protected native desert plants under the California Desert Native Plants Act. The applicant shall submit a detailed plan consistent with the requirements of the Act. The City shall hire, at the applicant's expense, a qualified biologist to review the plan and provide conditions of approval for the grading permit. The Project shall comply with any conditions of approval imposed by the City upon issuance of the permit.

The permit application shall specify information outlined in the California Desert Native Plant Act Section 80114, which includes but is not limited to, the number and species of native plants to be removed, a description of the real property from which the plants are to be removed, and in the case that relocation is required, the destination of the native plants and the manner in which the plants are to be salvaged. Pursuant to the California Desert Native Plants Act, tags or seals issued by the City of Twentynine Palms must be attached to the native plants at the time of harvesting and before transporting to their permanent relocation site(s) and must remain attached to the plant until transplanted into its ultimate destination. Transport of salvaged plants will occur as prescribed by the City of Twentynine Palms.

If relocation is required by the applicable review authority, the following actions shall also be implemented to ensure successful relocation of desert native plants:

- Salvaged plants shall be transplanted expeditiously to either their final on-site location, or to an approved off-site area. If the plants cannot be expeditiously taken to their permanent relocation area

at the time of excavation, they may be transplanted in a temporary area (stockpiled) prior to being moved to their permanent relocation site(s).

- Plants designated for relocation shall be marked on their north facing side prior to excavation. Transplanted plants shall be planted in the same orientation as they currently occur on the project site, with the marking on the north side of the trees facing north at the relocation site(s).

- Transplanted plants shall be watered prior to and at the time of transplantation. The schedule of watering shall be determined by the qualified desert native plant expert(s) to maintain plant health. Watering of the transplanted plants shall continue under the guidance of qualified desert native plant expert(s) until it has been determined that the transplants have become established in the permanent relocation site(s) and no longer require supplemental watering.

2.5.8 Significance After Mitigation

With mitigation measures, the proposed Project and related off-site area, residential GPA, and roadway dedication would not result in any significant impacts to biological resources.

2.5.9 Cumulative Impacts

The proposed Project, along with other projects developed under the General plan's land use designations, will result in impacts to plants and wildlife, natural communities, waters of the State, riparian habitats and other biological resources. As is the case with the proposed Project, other future projects will be required to comply with the regional and local ordinances designed to protect biological resources and will be required to conduct site-specific biological resource assessments and surveys. These surveys will include mitigation measures designed to reduce each project's impacts, and will effectively mitigate any incremental impact on biological resources. Future preservation of open space lands, purchases of mitigation bank land, and similar measures will be imposed as impacts are identified. For this reason, Project impacts would not be cumulatively considerable.

2.6 Cultural Resources

2.6.1 Introduction

This section evaluates the potential for the proposed Project to result in adverse impacts to cultural resources. Cultural resources include Native American cultural resources, archaeological resources, historic resources, and human remains. Mitigation measures to reduce impacts to a less than significant level are identified, where appropriate. This section is based primarily on the Cultural Resources Inventory and Evaluation Report prepared by Dudek[1] (Cultural Report), which is available in Appendix E of this EIR.

This section is complementary and related to section 2.18, Tribal Cultural Resources, which addresses issues of concern to local Native American Tribes.

2.6.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, the Project would have a significant effect on cultural resources if it would:

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 formal cemeteries.

2.6.3 Regulatory Framework

Federal

National Register of Historic Places

The 1966 National Historic Preservation Act authorized the establishment of the National Register of Historic Places (NRHP), which serves as the official list of significant historic places that have been designated for preservation. The NRHP offers a national set of guidelines for evaluating, documenting and protecting historic cultural resources. Items listed in the National Register include districts, sites, architecture, archaeology, engineering, and culturally significant properties.

[1] Cultural Resources Inventory and Evaluation Report for the E-Group PS Solar Project, prepared by Dudek, January 2025.

States adopt these guidelines and promote protection of their historic resources via their own legislative processes.

State

California Environmental Quality Act

The California Environmental Quality Act (CEQA) considers historic resources a part of the environment and therefore evaluation of a project's potential impacts on these resources is mandatory as part of the environmental impacts analysis for a project. State regulations affecting a project that pertain to the preservation of historic resources are provided in the CEQA Guidelines Section 15064.5, and Public Resources Code (PRC) Sections 5024, 5024.5, 21083.2 and 21084.1.

California Code of Regulations (CCR) codifies the guidelines for this CEQA process in Title 14, Chapter 3, Sections 15000 et seq. Specifically, Section 15064.5 describes the process for determining the significance of a project's impacts to archaeological and historical resources. Section 15064.5 also defines four ways that resources may qualify as "historical resources" for purposes of CEQA compliance:

(1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code § 5024.1, Title 14 CCR, Section 4850 et seq.).
(2) A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
(3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code § 5024.1, Title 14 CCR, Section 4852) including the following:

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
(B) Is associated with the lives of persons important in our past;
(C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
(D) Has yielded, or may be likely to yield, information important in prehistory or history.

(4) The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code sections 5020.1(j) or 5024.1.

California Public Resources Code (PRC) is a compilation of state laws governing environmental resources in California. Section 5024 determines that state agencies must preserve and maintain state-owned historical resources while Section 5024.5 outlines the process of preserving these resources. PRC Section 21080.2 requires lead agencies to determine whether a project will have significant impacts on historic resources, and explains the mitigation process. Notably, PRC Section 21084.1 provides an avenue for lead agencies to designate as "significant" a previously undesignated historical resource during the CEQA process.

PRC Section 21083.2 defines a "unique archaeological resource" as an archaeological artifact, object, or site which has a high probability of meeting any of the following three criteria:

1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3) Is directly associated with a scientifically recognized important prehistory or historic event or person.

PRC Section 5097.98 outlines the proper procedure in the event that Native American human remains are identified within a project site. The project activity

must stop, and the property owner must notify and consult with the Native American Most Likely Descendant (MLD) via guidance from the Native American Heritage Commission (NAHC). A plan is developed for the proper treatment of the human remains and any associated artifacts. This event is also addressed in CCR CEQA Guideline 15064.5 and in Section 7050.5 of the California Health and Safety Code.

California Register of Historical Resources

Since its inception in 1992, the California Register of Historical Resources (CRHR) provides an authoritative guide used by state and local agencies, private groups, and citizens in identifying and protecting architectural, historical, archeological, and cultural resources of significance from substantial adverse change. Per the CEQA impacts analysis, "historical resources" applies to any such resources listed in or determined to be eligible for listing in the CRHR, in a local register of historical resources, or determined to be historically significant by the Lead Agency.

In conformity with those of the National Register of Historic Places, the CRHR delineates four criteria to determine the significance of a historical resource. If a resource meets any one criteria, it is considered to be culturally and historically significant.

1) Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.

2) Associated with the lives of persons important to local, California or national history.

3) Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values.

4) Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

California Health and Safety Code

Section 7050.5 of the California Health and Safety Code provides instructions for actions to be taken in the event that human remains are discovered on a project site. Excavation or disturbance of the site is paused, and the County coroner is notified within 24 hours of the discovery. Within the following 48 hours, the coroner determines whether the remains are those of a Native American and, if so, must contact the Native American Heritage Commission (NAHC) within 24 hours. The

NAHC then contacts the Mostly Likely Descendant and provides recommendations for the appropriate treatment for the remains.

Local

City of Twentynine Palms General Plan 2012

The City's General Plan includes goals, policies and programs relating to cultural resources in its Conservation Element, as listed below.

Goal CO-2 Identify the City's cultural resources and establish regulations to protect them.

Policy CO-2.1 All projects in areas where a previous survey has not been completed in the past five years shall contact the Archaeological Information Center (AIC) for a records search on the project site for potential archaeological or historical resources. The project shall comply with AIC recommendations.

Policy CO-2.2 Develop an archaeological and historical resources database and mapping information to be maintained at City Hall to be used as a basis for review during entitlement processes.

Policy CO-2.3 Identify public and private buildings which are of local, historical, or cultural importance and adopt programs to encourage their preservation and/or reuse.

Policy CO-2.4 Adopt land use regulations which balance cultural preservation of cultural resources when such resources are deemed sensitive and significant by a certified archaeologist.

Policy CO-2.5 Encourage in-place preservation of cultural resources when such resources are deemed sensitive and significant by a certified archaeologist.

Policy CO-2.6 When in-place preservation of sensitive and significant resources is not feasible, require proper recovery and preservation of cultural resources when possible.

Policy CO-2.7 Require onsite monitoring of grading activities when deemed necessary by a certified archaeologist as a result of the cultural resources survey required in Implementation Policy CO 2.1.

Policy CO-2.8 Require special monitoring on development project sites known to contain or a soils analysis indicates the presence of finer-grained fluvial, lacustrine, or aeolian deposits which are sensitive for potentially containing fossilized remains.

Policy CO-2.9 In the event that Native American cultural resources are discovered during project development/construction, all work in the immediate vicinity of the find shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the overall project may continue during this assessment period.

Policy CO-2.10 In areas containing finer-grained fluvial, lacustrine, or aeolian deposits where it is unknown if paleontological resources exist, field surveys prepared by a qualified paleontological professional before grading shall be conducted to establish the need for paleontological monitoring which shall be done upon recommendation by the professional paleontologist and approval by the Community Development Director.

2.6.4 Environmental Setting

The Project encompasses 477± acres of vacant land in the rural northwest portion of Twentynine Palms. North of Samarkand Drive, 241 acres are proposed for the Solar Project while 236 acres south of Samarkand Drive are part of the Residential GPA. The Solar Project site includes the 184-acre solar facility site and 3.3 acres of off-site area to accommodate the site access driveway from Two Mile Road and the physical connection from the solar facility to the Southern California Edison Carodean Substation. Additionally, 11.6 acres are allocated to road dedications for Amboy Road, Samarkand Drive and Noels Knoll Road. Roads would be dedicated for future development but will not be constructed as part of the Project.

Per CEQA guidelines, Project archaeologists conducted a formal cultural resources inventory for the Solar Project site. However, a cultural resources inventory was not conducted for the Residential GPA site because no development is planned at this time, which is discussed below in greater detail. The cultural resources inventory consists of a records search with the South Central Coastal Information Center (SCCIC) for both the Project site and a one-mile radius around the Project site, a Native American Heritage Commission (NAHC) Sacred Lands File search, tribal information outreach, and an intensive-level pedestrian site survey of the Project site. A comprehensive cultural and historic resources report was prepared and is provided in Appendix E.

Prehistoric Setting

Chronological timeframes for the Mojave Desert region surrounding the Project site were constructed by archaeologists based on artifacts dating back 12,000 years. The timeframes provide context for the development of local Native American cultures prior to European arrival to the area in the mid 1700s.

Early human presence throughout the Mojave Desert region is evidenced by archaeological assemblages containing fluted-base projectile points dated to the end of the Pleistocene Era between 12,000 and 10,000 BP. Many of these artifacts are documented along the shorelines of ancient lakes including Lake Mojave, China Lake and Little Lake. Moving forward in time as Lake Mojave receded and the environment became more arid, higher concentrations of pointed projectiles have been found along ancient shorelines as there may have been a greater dependence on the lakes that remained. Shapes of the projectiles evolved along with the available animal life and were found to be smaller. Gradually, during the Middle Holocene and Late Holocene periods between 7,000 and 1500 BP, milling stones appear more frequently, suggesting a shift toward a diet that included more seeds. Mortars and pestles eventually became much more frequent during the later Holocene, 1,500 to 300 BP, indicating a stronger dependence on plant foods. The bow and arrow eventually replaced the spear, thus smaller projectile points became more numerous in this era.

Trade between the Mojave Desert cultures, and Coastal cultures is marked by the presence of coastal species shells in the Antelope Valley region. Ceramics from the Ancestral Puebloan cultures of Arizona and New Mexico appear in the southern Mojave area between 1200 to 1100 BP. Increased trade with Colorado River cultures during the Middle Holocene through to the present is documented by the persistent presence of buffware ceramics unique to that area.

Ethnohistoric Setting

The neighboring ethnographic territories of the Serrano and Cahuilla Indigenous groups surround the Project area. The two territories meet in present day Joshua Tree National Park, located approximately 1.8 miles south of Samarkand Drive. The Cahuilla and the Serrano people have lived in the region for over 3,000 years, which places the early rise of these cultures in the Early Late Holocene Period (4,00-1,500 BP).

Serrano (Maara'yam, Yuhaaviatam)

"Serrano" is a Spanish-derived term referring to the Native American people who are associated with the "highlands," or San Bernardino Mountains, but the Serrano are comprised of two distinct clans who are associated with different ecological

regions. First, the Serrano refer to themselves as "Taaqtam," which means "People." The Maara'yam clan, which translates to "the People of the Maara," are associated with Morongo desert area, and the Yuhaaviatam clan, or "People of the Pines," live in the San Bernardino Mountains.[2] Serrano territory extends from Tejon Creek in the west, across Joshua Tree National Park to the south, then north along the west boundaries of the Mojave Preserve and includes areas north of Baker, California.

Historically, the Serrano organized small villages located where water was available. Hunting local wildlife and gathering seeds, nuts, tubers, bulbs, cacti, grasses, and various stones, provided materials for food, clothing, blankets, mats, shelter, tools, and instruments. Family groups were structured by patrilineal lines and associated themselves with either the Tukum (Wildcat) moiety or the Wahilyam (Coyote) moiety.

Cahuilla

The name "Cahuilla" translates to "the master," "the powerful one," or "the one who rules."[3] Traditional Cahuilla territory shares a border with that of the Serrano in present-day Joshua Tree National Park to the north and reaches from the Colorado River on the east, to the San Jacinto Mountains and the San Gorgonio Pass to the west and includes the Santa Rosa Mountains to the south. Three distinct ecological conditions: the low desert of the Coachella Valley, the higher desert of the Pass area, and the higher elevation mountains separated the Cahuilla nation into three geographically distinct groups: Desert Cahuilla, Western (or, Pass), and Mountain Cahuilla. Today, nine bands of Cahuilla are officially recognized across these three groups.

Like the Serrano, the Cahuilla family groups associated with one of two moieties, the Tuktum (Wildcat) or the Istam (Coyote) and were organized along patrilineal lines. Cahuilla culture relied upon local wildlife and plants for food, medicine, and for materials needed for clothing, cooking, shelter, and hunting. Acorns, mesquite beans, cacti, pinyon nuts, yucca, agave, and fan palms were commonly used.
In the Twentynine Palms area, the Serrano and Cahuilla interacted peacefully with the Chemehuevi people who lived east of the area. The Oasis of Mara, in Joshua Tree National Park, was central to Native American tribes in this area due to the available water. The Serrano and Cahuilla were first to use the site. Later, in

2 Native American Heritage Month, City of Riverside, November 6, 2023, https://www.riversideca.gov/press/native-american-heritage-month, accessed March 2024.

3 The Cahuilla People, Augustine Band of Cahuilla Indians, 2018, accessed March 28, 2024, https://augustinetribe-nsn.gov/cahuilla-people/#:~:text=The%20Cahuilla%20can%20be%20generally,and%20practiced%20the%20same%20traditions, accessed March 2024.

1860, the Chemehuevi, now locally known as the Twentynine Palms Band of Mission Indians, settled at the Oasis.

Historic Era

The first documented visit by Europeans to the Mojave Desert region occurred in 1772 by the Spaniard Pedro Fages, which was followed by a 1776 exploration of the Mojave River by Father Francisco Hermenegildo Garcés. A trade route between New Mexico through the Sonoran Desert, the Mojave Desert and over to present day Los Angeles would eventually be established by 1831. The Spanish Trail would eventually provide access to natural resources for other non-Indigenous people such as animal trappers and miners.

The Spanish Mission System began in California in 1776, however, due to the remoteness of their territories in the mountains and deserts, many of the Serrano and Cahuilla remained out of reach of the Mission System until 1819. In 1819 an outpost, or Asistencia, of the San Gabriel Mission was built in the Redlands area and led the way in forcibly removing many of the Serrano people from their mountain territories into nearby missions throughout the 1800s. Most of the Serrano descendants today are affiliated with either the Yuhaaviatam of San Manuel Nation, the Morongo Band of Mission Indians, or the Serrano Nation of Indians.

In the 1870s gold was discovered in a mining area known as Gold Park, south and east of the Oasis of Mara. Gold mining in Twentynine Palms continued until the U.S. joined World War I in 1917. After the war, the Twentynine Palms area was developed as a homesteading community for war veterans who suffered from respiratory illnesses as a result of being exposed to mustard gas during the war. During the early 20th century as the community grew, a school and a post office were opened. Joshua Tree National Monument was established in 1936 and became a national park in 1994. In 1952, the Marine Corps Training Center opened, now called the Marine Corps Air Ground Combat Center.

2.6.5 Existing Conditions

Records and Literature Search

A request was submitted to the California Native American Heritage Commission (NAHC)for a records search of their Sacred Lands File. The NAHC is the State's trustee agency for the protection of tribal cultural resources. The NAHC identifies, catalogs, and protects of Native American cultural resources and maintains an inventory of Native American sacred sites on public lands. Correspondence with current local Native American tribes was also established by Dudek requesting further information about potential resources on the Project site. Five Native

American tribes responded to the correspondence. Letters and tribal responses are provided in Appendix E.

In addition, the City conducted Tribal consultation with fourteen Native American tribes under the requirements of Senate Bill 18 (SB 18) and Assembly Bill 52 (AB 52). Copies of these letters and responses are available in Appendix E. The analysis of the results of the City's Tribal consultation is provided in Section 2.18.

A California Historical Resources Information Systems (CHRIS) records search for historical and archaeological resources on the Project site and within a one-mile buffer of the Project site was conducted at the South Central Coastal Information Center (SCCIC) located on the California State University, Fullerton campus. The SCCIC is the state's designated repository of historical resources for San Bernardino County. The CHRIS search revealed that seven cultural resource studies have been previously conducted within one mile of the Project site. One study from 2002 intersects the Project site and a as a result, 5% of the Project site property has been previously investigated. In addition, ten resources were previously recorded within one mile of the Project site. Two of these ten resources had been documented as occurring within the Project site boundary.

Historic aerial photographs from 1970 to 2020 as well as topographic maps were examined online. The map research showed that the Project site remained undeveloped and untouched, while nearby to the east and south some rural housing development occurred during this time. The SCE Carodean Substation appeared in 1994. Two Mile Road was paved in 2005, and Samarkand Drive appeared in 2012. The aerial and topographic maps revealed that no historic-age structures existed on the Project site and that the Project site has not been historically disturbed.

Pedestrian Field Survey

The Cultural Report states that the presence of alluvial soils in the Project area have a moderate potential for containing cultural artifacts. From December 18 to 20, 2023, an intensive pedestrian field survey of the Solar Project site was conducted by three qualified archaeologists. Procedures, techniques and equipment meeting the standards and guidelines set by the Secretary of the Interior were applied to the survey. North-south oriented transects of ten meters in size were investigated for prehistoric and historic artifacts, indications of cultural middens, and the presence of former structures. Locations where initial research indicated the potential presence of artifacts were rigorously investigated for a confirmation of those artifacts.

The two previously recorded cultural resources within the Solar Project site were investigated during the Project site survey. CA-SBR-0011419H was recorded in 2003

during a survey for the future alignment of Two Mile Road. The resource was an east-west dirt road originally constructed in 1927-1930, which was paved in 2005 as part of the Two Mile Road expansion. P1021-3 was an informal recording of potential "Lithic Scatters," which was determined during the Project site survey in December 2023 to not be present and originally may have been mapped incorrectly. Therefore, this resource cannot be evaluated and no further discussion of P1021-3 will be provided in this EIR.

2.6.6 Project Impacts

During the Project site pedestrian survey, one cultural resource and sixteen isolates were newly identified on the surface, which are defined Table 2.6-1. Full descriptions of the artifacts are provided in the Cultural Resources Inventory and Evaluation Report in Appendix E.

Table 2.6-1
Newly Identified Cultural Resources Within the Solar Project Area

Primary/ Temporary ID	Period	Description	Field Results
TP-KM-S-001	Historic	Trash Scatter	Newly identified
TP-KM-I-001	Prehistoric	Cryptocrystalline silicate primary flake	Newly identified
TP-KM-I-002	Prehistoric	Metavolcanic bifacial core	Newly identified
TP-KM-I-003	Historic	Pull tab Coca Cola can	Newly identified
TP-KM-I-004	Historic	Pull tab beverage can	Newly identified
TP-KM-I-005	Historic	Pull tab beverage can	Newly identified
TP-KM-I-006	Historic	Church key beverage can	Newly identified
TP-KM-I-007	Historic	Church key beverage can	Newly identified
TP-KM-I-008	Historic	Motor oil can with threaded cap	Newly identified
TP-KM-I-009	Historic	Pull tab beverage can	Newly identified
TP-KM-I-010	Historic	Pull tab beverage can	Newly identified
TP-KM-I-011	Historic	Sanitary food can	Newly identified
TP-KM-I-012	Historic	Sanitary food can	Newly identified
TP-KM-I-013	Historic	Motor oil can	Newly identified
TP-KM-I-014	Historic	Sanitary can	Newly identified
TP-KM-I-015	Historic	Sanitary food can	Newly identified
TP-KM-I-016	Historic	Sanitary food cans	Newly identified

a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5.

Solar Project Impacts

Per the cultural resources evaluation, the previously recorded historic resource, CA-SBR-0011419H, and the newly identified cultural resource, TP-KM-S-001, were evaluated for cultural and historical significance. Ca-SBR-011419H was paved as part of the Two Mile Road expansion in 2005 and does not possess research value.

TP-KM-S-001 consists of 20th century scattered trash, including 65+ cans, five glass bottle fragments and one can lid. The absence of any structure indicates that the presence of these items is a result of a waste dumping event and offers no valuable cultural research value. Both resources fail to meet any of the four CRHR criteria for determination of cultural/historical significance and therefore are not significant under CEQA.

Regarding the sixteen newly identified isolates, two are identified as prehistoric archaeological artifacts: a prehistoric lithic flake (TP-KM-I-001) and a prehistoric core (TP-KM-I-002). Fourteen are identified as historic era artifacts consisting of historic era cans (TP-KM-1-003 through TP-KM-I-016). The recording and evaluation of the sixteen isolates determined that these resources do not meet the criteria for either cultural or historical significance. The items are not associated with events that have made a significant contribution to the history and cultural heritage of California or Twentynine Palms. They are not associated with any historically significant individuals. They do not embody distinctive characteristics of a particular type, period, region, or method of construction. Finally, the isolates do not provide research value for understanding prehistoric and historic era events. Hence, the sixteen isolates (TP-KM-1-001 through TP-KM-I-016) are not eligible for listing on the CRHR and are not significant according to CEQA guidelines.

According to the evaluation, the Solar Project would not cause a substantial adverse change in the significance of an historical resource pursuant to §15064.5 and impacts would be less than significant.

Residential GPA Impact

The Project site where the proposed Residential GPA applies is currently 60 acres of undeveloped intact desert habitat. The Residential GPA would increase the density of single-family housing from 1 unit per 5 acres (RL-5) to 1 unit per 1 acre (RS-1) on these 60 acres at the southwest corner of Samarkand Drive (extended) and Noels Knoll Road (extended). The cultural resources inventory and evaluation

does not include this portion of the Project area because no development is planned at this time, and the Residential GPA will not, in and of itself, result in any development. However, although no historically significant resources were identified on the Solar Project site, based on the findings from the Solar Project site survey as described above, there is potential for historic resources to occur on the Residential GPA site. Future construction of residences on the land could result in potentially significant impacts to historic resources. During the planning stages for these residential structures, the Residential GPA site would undergo the same thorough investigation and evaluation of cultural and historic resources that is afforded to the Solar Project site. As necessitated by a cultural inventory and evaluation, the mitigation measure described below as CUL-1, requiring a cultural resource survey when development is proposed, would reduce impacts to less than significant levels.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5.

Solar Project Impacts

As discussed above, two newly identified prehistoric isolates, a lithic flake (TP-KM-I-001) and a prehistoric core (TP-KM-I-002) were found during the field survey for the cultural resources report (Appendix E). The Project archaeologist determined that these two isolates do not possess distinctive characteristics of a particular era or event and do not offer significant historical research value in and of themselves. However, their presence and the presence of other prehistoric resources in the region, coupled with the alluvial soil on the Project site provide evidence suggesting that archaeologically significant resources may potentially occur under the surface of the site. The hydrologic features and the alluvium justify the case that artifacts originating elsewhere could have been deposited on the Project area and may be discovered during the grading of the Project site. Therefore, the Solar Project poses a potentially significant impact on archaeological resources at the Project site. In order to mitigate this potentially significant impact, a Cultural Resources Monitoring and Discovery Plan must be prepared to facilitate site monitoring by a qualified archaeologist during all ground-disturbing activities. The preparation of the Plan and site monitoring requirements are specified below as Mitigation Measure CUL-2. The incorporation of the Cultural Resources Monitoring and Discovery Plan and monitoring of Project grading activities would reduce potential impacts to archaeological resources to a less than significant level.

Residential GPA Impacts

As explained in the Impact (a) discussion above, the cultural resources inventory and evaluation does not include this portion of the Project area. However, based on the findings from the Solar Project site survey, potential exists for unique archaeological resources to occur both above and below the surface. Based on research and site survey, a Cultural Resources Monitoring and Discovery Plan may need to be prepared to facilitate site monitoring by a qualified archaeologist during all ground-disturbing activities, based on the findings of the cultural resource report required in Mitigation Measure CUL-1, which requires the preparation of a cultural resource report for the Residential GPA site. Site monitoring is discussed in Mitigation Measure CUL-2, and would likely apply following surveys and Tribal consultations for the 60 acres covered by the Residential GPA. With these mitigation measures in place, potential impacts to archaeological artifacts would be reduced to less than significant levels.

c) Disturb any human remains, including those interred outside of formal cemeteries.

Solar Field Impacts

The records and literature search conducted for the Solar Project site cultural resource study (Appendix E) found no evidence of past use of the Project site for human burial. During the on-site pedestrian survey of the Project site, no evidence of human remains, human burial, or cremations was identified.

However, should any human remains be identified during Project site excavation, California Health and Safety Code, Section 7050.5 requires that all excavation activity must stop, and the County Coroner must inspect the site. If the remains are identified as those of a Native American individual by the Coroner, the NAHC is informed and required to contact the Most Likely Descendant. The descendant will recommend the appropriate next step. This requirement of California law shall ensure that the Project impacts to human remains are less than significant.

Residential GPA Impacts

As previously stated, the cultural resources inventory and evaluation does not include this portion of the Project area. If any human remains were discovered on the Residential GPA area, either during the preparation of a site-specific cultural resource survey as required under Mitigation Measure CUL-1, or during the initial grading of the land, California Health and Safety Code Section 7050.5 would apply. Proper identification and treatment of discovered human remains by the County Coroner and by a Native American Mostly Likely Descendant, if applicable, would reduce impacts to human remains to less than significant levels.

2.6.7 Mitigation Measures

CUL-1 Cultural Resource Survey – Residential GPA Site

In order to assure that impacts to cultural resources are reduced to less than significant levels, a cultural resource survey, including an analysis of both historic and archaeological resources, shall be conducted prior to the approval of a tentative subdivision map or any other entitlement to allow development on the Residential GPA site. The survey shall include records searches, literature review and field investigations, and shall include mitigation measures as necessary to protect any resources identified on the site.

CUL-2 Archaeological and/or Tribal Resource Discovery and Documentation

A Cultural Resources Monitoring and Discovery Plan (Plan) shall be prepared and finalized prior to the initiation of Solar Project construction. The Plan will require that qualified archaeological monitor(s) be present and that tribal monitor(s) representing the Cahuilla Band, the Agua Caliente Band and the Yuhaaviatam be present during all ground-disturbing activities within the Project site, unless Tribe(s) provide the City with written withdrawal from their monitoring request. The applicant/developer shall allow 45 days from initial contact with the above-listed Tribes to enter into a contract with the Tribes for monitoring services. If the applicant/developer can demonstrate to the City they were unable to secure an agreement from the above-referenced Tribe, or if the contracted Tribe fails to fulfill its obligation under the contract terms, then the applicant/developer may retain an alternative qualified tribal monitor approved by the City. Monitoring requirements and locations will be defined in the Plan, along with resource discovery protocols and guidance for reducing or terminating site monitoring in the case that no artifacts are identified. Should an artifact be discovered, all construction activity within 100 feet of the discovery shall stop until a qualified archaeologist can evaluate the significance of the artifact and make a determination whether further study is necessary, and whether or when work may resume. Should the artifact be found to be significant under CEQA, an archaeological treatment plan and further data recovery may be required, as determined by the Project archaeologist and the Tribes.

2.6.8 Significance After Mitigation

With the implementation of Mitigation Measures CUL-1 and CUL-2, and the requirements of California law governing the discovery of human remains, impacts will be reduced to less than significant levels.

2.6.9 Cumulative Impacts

In its General Plan, the City of Twentynine Palms commits to identifying and preserving historically and culturally significant resources during development projects where ground disturbance activities could potentially impact these resources. The City's Conservation and Open Space Goal CO-2 and associated Policies CO-2.1 through 2.10 provide a checklist of actions regarding research and preservation of artifacts.

Geographically, cumulative impacts to cultural and historical resources include the Solar Project site, the Residential GPA site, and the immediate surrounding vicinity, which are all within the traditional use areas of the Serrano and Cahuilla people. The Project area and surrounding lands would contribute to cumulative impacts if the Project and future projects were to adversely impact significant cultural resources not only on the Project site, but also throughout the community.

To guide the discovery, identification and preservation of potential resources and reduce potential cumulative impacts, the City requires the preparation of cultural resources inventory and evaluation reports utilizing a wide range of historical data including archaeological reports, historic accounts, and tribal resources. This requirement will be applied to the Residential GPA area and other lands in the City as development occurs in the area. Mitigation, including consultation, monitoring, recording, and translocation (as needed) will be applied to future projects in the City, as they have been to the Solar Project and Residential GPA. With implementation of similar mitigation measures, the potential cumulative impacts would not be significant.

2.7 Energy Resources

2.7.1 Introduction

The Energy Resources section of the EIR describes existing conditions regarding available energy resources within the City of Twentynine Palms, including the Project area, and analyzes the potential impacts of the Project on these resources. A wide range of data including research on regional scale planning and environmental documents have been used in analyzing the Project and its potential effects. Specifically, this section evaluates the demand for energy resources attributable to the Project during construction and operation, and demonstrates whether the current and planned electrical, natural gas, and petroleum-based fuel supplies and distribution systems are adequate to meet the Project's forecasted energy consumption. The analysis determines the Project's impacts based on the use and conservation of energy resources.

An Air Quality and Greenhouse Gas Report was prepared for the proposed Project and alternatives and is provided in Appendix C of this EIR. The report includes transportation (VMT), electricity, and natural gas consumption estimates for the Project.

2.7.2 Thresholds of Significance

The following analysis criteria and thresholds are based on Appendix G of State CEQA Guidelines. A project would have a significant impact relating to energy and mineral resources if it would:

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 Initial Study determined that the Project would result in "No Impact' for threshold question b) above. Therefore, it is not analyzed further in this EIR.

2.7.3 Regulatory Framework

Federal

National Energy Policy Act of 2005

The National Energy Policy Act of 2005 sets energy efficiency standards for equipment with the goal of reducing reliance on nonrenewable energy sources and provides incentives to reduce current demand on these resources. The act provides for incentives for high-efficiency vehicles (including electric), new and existing homes, commercial buildings, and manufacturers of high-efficiency appliances. It also addresses combined heat and power, appliance labeling, research and development, efficiency in federal and public facilities, building energy codes, public housing, and other efficiency topics.

Energy and Independence and Security Act (EISA)of 2007

Signed into law in December 2007, the EISA aimed to move the U.S. towards energy independence and security through the increased production of clean renewable fuels and introduced more aggressive requirements in three key areas: vehicle fuel economy, renewable fuel standards, and energy efficiency for appliances, lighting, and federal buildings.

2022 Inflation Reduction Act

The 2022 Inflation Reduction Act aims to lower energy costs, increase clean energy deployment, and reduce carbon emissions through tax credits, grants, and loans for renewable energy technologies like solar, wind, and battery storage, while also funding carbon capture, clean hydrogen, and energy-efficient manufacturing to cut greenhouse gas emissions by up to 40% by 2030.

2021 Infrastructure Investment and Jobs Act (IIJA)

The IIJA was signed into law November 2021 allocating funds for improving U.S. infrastructure, including investments in areas like clean energy transmission, broadband internet, and transportation (roads, bridges, public transit and EV charging). Funding was provided through a mix of formula-based grants and competitive grants for state and local projects.

State

California 2008 Energy Action Plan Update (2008 EAP Update)

The 2008 EAP Update to the 2005 Energy Action Plan II is California's principal energy planning and policy document. The updated document examines the State's ongoing actions in the context of global climate change. The 2008 EAP Update continues the goals of the original 2003 Energy Action Plan, describes a coordinated implementation of the State's energy policies, and identifies specific

action areas to ensure that California's energy resources are adequate, affordable, technologically advanced, and environmentally sound. Priority actions to address increasing energy demands are energy efficiency and demand response (i.e. reduction of customer energy usage during peak periods to address system reliability and support the best use of energy infrastructure). The use of renewable energy sources and increased reliance on distributed generation (i.e. smaller power plants near or at centers of high demand) are additional priorities. To the extent that these actions are unable to meet increasing energy demand and transmission capacity needs, fossil fuel energy sources that are cleaner and more efficient would be supported.

The 2008 EAP Update examines policy changes in the areas of energy efficiency, demand response, renewable energy, electricity reliability and infrastructure, electricity market structure, natural gas supply and infrastructure, research and development, and climate change.

Assembly Bill 32 of 2006 (AB 32) and Senate Bill 32 of 2016 (SB 32)I

The California Global Warming Solutions Act of 2006 (AB 32) requires California to adopt regulations in order to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. This represents reductions of approximately 15% below the emissions projected in a "business as usual" scenario. SB 32, The California Global Warming Solutions Act of 2016 is the companion bill to AB 32. This bill furthers the State's emissions limit and requires California to adopt regulations to reduce GHG emissions to 40% of 1990 levels by 2030.

Industry, energy, and transportation sectors are subject to the 2022 Scoping Plan for Achieving Carbon Neutrality. Three previous Scoping Plans defined pathways for achieving GHG reduction targets within industrial, energy, and transportation sectors, and the 2022 Scoping Plan expands upon the previous plans by setting a target of reducing GHG emissions to 85% below 1990 levels by 2045.

SB 1020 - Clean Energy, Jobs, and Affordability Act of 2022

SB 1020, part of California's Global Warming Solutions Act framework, advances the state's climate goals by mandating a transition to 90–100% renewable and zero-carbon energy for retail electricity sales by 2035–2045, reducing greenhouse gas emissions. SB 1020 mandates that renewable and zero-carbon energy sources provide:

- 90% of retail electricity sales to California customers by December 31, 2035,
- 95% by December 31, 2040,
- 100% by December 31, 2045, and
- 100% of electricity for state agencies by December 31, 2035.

Assembly Bill 1279 – California Climate Crisis Act

Signed in 2022, AB 1279 establishes legally binding goals for statewide carbon neutrality by 2045 and net-negative emissions thereafter. Key targets include reducing GHG emissions to at least 85% below 1990 levels by 2045 and requiring the California Air Resources Board (CARB) Scoping Plan be updated to align with these goals, emphasizing carbon removal in addition to emissions reductions.

Executive Order (EO) N-79-20 – Zero Emissions by 2035

California Executive Order N-79-20, issued by Governor Gavin Newsom on September 23, 2020, addresses the climate crisis by directing state agencies to phase out new sales of gasoline-powered passenger vehicles (cars and light trucks) by 2035, transitioning to 100% zero-emission vehicles, consistent with the state's goals of carbon neutrality by 2045.

Clean Energy and Pollution Reduction Act of 2015 (SB 350)

SB 350 establishes a state renewable energy procurement goal, increasing from 33% by 2020 to 50% by 2030. The act is implemented by the California Energy Commission in conjunction with state agencies including the Public Utilities Commission and CARB. Large utility companies are also required to prepare integrated resource plans (IRPs) establishing how the utilities will meet customer demands while reducing GHG emissions and increasing the use of clean energy sources.

California Renewable Portfolio Standard (RPS) Program of 2018 (SB 100)

SB 100 increases the renewable energy procurement goals of SB 350 such that the state must achieve 50% of its energy from renewables by 2026, and 60% by 2030.

Low Carbon Fuel Standard (LCFS) in conjunction with AB 32

Similar to the objectives of the RPS Program for the electricity sector, the LCFS encourages the production and use of transportation fuels with lower carbon intensity to diversify the transportation fuel market, reduce GHG emissions and ultimately reduce dependency on petroleum-based fuels. LCFS operates on a credit/deficit-based system.

Integrated Energy Policy Report (IEPR) (SB 1389)

The California Energy Commission (CEC) is responsible for preparing integrated energy policy reports, which identify emerging trends related to energy supply, demand, conservation, public health and safety, and maintenance of a healthy economy. The CEC adopts an IEPR every two years and an update every other year. The 2023 CEC IEPR notes that "Achieving California's goals for mitigating climate change and protecting the health of all Californians hinges on simultaneously transitioning to renewable generation while electrifying much of our economy. A safe, reliable, and affordable electric grid is the keystone of the

clean energy transition." The IEPR notes that grid-scale solar and wind build rates need to triple to meet the State's goal of 100 percent renewable and zero-carbon electricity by 2045.

Title 24 of the California Code of Regulations

The California Building Standards Code covers a broad set of regulations regarding the construction, maintenance, fire safety, and accessibility of buildings, as well as the integration of energy conservation practices and green design.

Adopted in 1978, Part 6 of Title 24 establishes energy efficiency standards for residential and non-residential buildings constructed in the State. With the aim of continuing to reduce energy demand and consumption, Part 6 is updated as needed to reflect new energy efficiency technologies and methodologies.

Part 11 of Title 24 of the CCR, the California Green Building Standards Code, or CALGreen, established mandatory minimum environmental performance standards addressing energy and water efficiency, material and water conservation, and environmental quality. CALGreen became mandatory in January 2022 and applies to all new commercial, low-rise residential, state-owned buildings, schools, and hospitals constructed in California. CALGreen was developed to help California meet the emissions reductions targets set forth in AB 32 and SB 32.

Advanced Clean Cars II (ACC II)

Approved in November 2022, the Advanced Clean Cars II (ACC II) regulations require that all new passenger cars, trucks, and SUVs sold in California are zero emission vehicles by 2035. This regulation establishes a phased approach, with increasing ZEV sales targets starting in 2026 (35% of new vehicle sales) and rising annually until reaching 100% by 2035. ACC II not only accelerates the transition away from internal combustion engines but also aligns with California's broader commitment to achieve carbon neutrality by 2045, reinforcing its leadership in environmental policy.

Advanced Clean Trucks Regulation

CARB introduced the Advanced Clean Trucks (ACT) regulation in 2020, effective 2024, to accelerate the transition to zero-emission vehicles in the trucking industry. The ACT focuses on medium- and heavy-duty vehicles (Classes 2b through 8), requiring manufacturers to progressively increase their ZEV sales from 5–9% in the initial year to a full 100% by 2040, thereby slashing tailpipe emissions without directly burdening end-users like fleet operators.

Regional and Local

San Bernardino County Regional Greenhouse Gas Reduction Plan Update (2021)
The 2021 San Bernardino County Regional Greenhouse Gas Reduction Plan (2021 Plan Update) identifies state GHG reduction measures applicable to participating jurisdictions within the County, as well as local measures selected by each jurisdiction that could reduce future GHG emissions within jurisdictional boundaries. The reduction plan has individual sections for each jurisdiction that detail the jurisdiction's 2016 GHG emissions inventory, 2030 GHG emissions forecast, reduction goal, jurisdiction-selected (or consultant-identified) GHG reduction measures, and related General Plan policies or other ongoing programs in the jurisdiction. The purpose of the plan is to provide participating jurisdictions with relevant information to complete and adopt their own Climate Action Plan (CAP). At present, since the City of Twentynine Palms does not have a Climate Action Plan, the County's 2021 Plan Update is the appropriate tool for evaluation of impacts.

To meet the State's goal of carbon neutrality by 2045, the County must reach an emissions reduction target of 40% below 2020 levels by 2030. While continued reductions beyond 2030 will be necessary, the 2030 target would put the County on track to meet the State's 2045 goal.

City of Twentynine Palms General Plan 2012
Climate change goals and policies that govern new development and redevelopment throughout the City are prescribed in the City's 2012 General Plan.

Goal LU-7 Protect and preserve Twentynine Palms natural resources, promote the existing quality of life and prepare for future residents and businesses by promoting superior sustainable development.

Policy LU-7.2 Development shall be sustainable in its use of land and shall limit impacts to natural resources, energy, and air and water quality.

Policy LU.7.8 Encourage sustainable building practices that go beyond the requirements of Title 24 of the California Administrative Code through energy-efficient design.

Goal CO-4 Develop regulations and policies which reduce pollutants responsible for lowering the air quality within the City and for adding to the global climate change problem.

Policy CO-4.12 Cooperate with SCAG and SANBAG to develop a local climate action plan.

Policy CO-4.13 Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective, for both public and private development projects.

Policy CO-4.17 Work with local energy providers on voluntary incentive-based programs to encourage developers to use energy efficient designs and equipment beyond the requirements of Title 24. Encourage development to utilize CEC's voluntary Tier II Energy Efficiency standards in effect at the time building construction begins in combined with space heating, cooling and water heating energy.

Goal CO-7 Develop regulations and programs to encourage sustainable practices in land use, use of buildings and for development and construction.

Policy CO-7.1 Use the City's building codes and development code to encourage sustainable construction practices and the use of energy-saving technology within buildings.

Policy CO-7.4 Develop provisions within the development and building codes to encourage and allow alternative energy facilities and equipment to be installed and developed on individual properties to serve that property.

2.7.4 Environmental Setting

According to the US Energy Information Administration (US EIA), as the most populous state in the US and the fourth largest economy in the world, California uses more energy than any other state. However, in terms of per capita energy consumption, California ranks 50th for residential and commercial energy use, 39th for industrial, and 36th for transportation energy consumption.[1] As the country's 4th largest energy producer, California generates about 90% of its electricity in-state and imports the remaining 10%. Electricity generation sources include natural gas (5,009,000 megawatt-hour [MWh]), nonhydroelectric renewables such as geothermal, biomass, solar (photovoltaic and thermal) (9,041,000 MWh),

[1] California State Profile and Energy Estimates, US Energy Information Administration, https://www.eia.gov/state/analysis.php?sid=CA, accessed February 2025.

nuclear power (1,638,000 MWh), coal (from one remaining 57-megawatt power plant, 22,000 MWh), petroleum (13,000 MWh) and hydroelectricity (2,779,000 MWh).[2] In 2024, California generated 57% of electricity from renewable sources, 35% from natural gas, and nuclear power provided the bulk of the rest.

In 2023, California consumed 2,087,461 million cubic feet of natural gas.[3] The percent of natural gas consumed by economic sectors as provided by the US EIA was estimated at[4]:

- 30.7% industrial end use
- 30.4% electric power
- 22.2% residential end use
- 12.3% commercial end use
- 1.5% vehicle end use
- 1.1% Pipeline and Distribution
- 1.6% Lease Fuel
- 0.1% Plant Fuel

More than 90% of the natural gas consumed in California is sourced from Oklahoma, west Texas and New Mexico. The remaining amount is sourced from the Rocky Mountain region, Canada, and Central and Southern California. Gas is transported across long distances via high-pressure pipelines and then transferred to smaller low-pressure pipelines to be either delivered to customers or stored in underground tanks.

In 2023, the State of California was the nation's 7th largest producer of crude oil and the third largest in crude oil refining. Of all energy sectors in California, transportation stands as the largest energy-consuming sector. Transportation fuels are comprised of four major categories: petroleum-based fuels, biofuels, natural gas, and electricity (batteries charged with electricity from many different sources). In the US, petroleum-based fuels comprise just under 90% of the transportation fuel market, followed by biofuels which contribute 6%, natural gas contributes about 5%, and electricity used for mass transit systems contributed less than 1%. In California, the transportation sector consumed 85% of the State's petroleum sources.

2 California Net Electricity Generation by Source June 2025, US Energy Information Administration, https://www.eia.gov/state/?sid=CA#tabs-2, accessed October 2025.

3 California Natural Gas Total Consumption, U.S, Energy Information Administration. Accessed October 2025: https://www.eia.gov/dnav/ng/hist/na1490_sca_2a.htm.

4 Table S5. Summary Statistics for Natural Gas – California, 2019-2023. Accessed October 2025: https://www.eia.gov/naturalgas/annual/pdf/table_S05.pdf

2.7.5 Existing Conditions

Electricity Service

In Twentynine Palms, electricity is provided by Southern California Edison (SCE). SCE distributes electricity to 15,000,000 people throughout central, coastal and southern California (excluding the City of Los Angeles). The 50,000 square mile service area includes over 180 incorporated cities and a majority of the unincorporated communities within 15 counties. Table 2.7-1 compares the mix of electric power sources that supplied SCE's 2022 delivery of electricity to that of California's total power mix.

Table 2.7-1
2022 Electric Power Mix Delivered to SCE Customers

Energy Source	SCE	State Power Mix
Eligible Renewables[1]	33.2%	35.8%
Biomass & Biowaste	*0.1%*	*2.1%*
Geothermal	*5.7%*	*4.7%*
Eligible Hydroelectric[2]	*0.5%*	*1.1%*
Solar	*17.%*	*17.0%*
Wind	*9.8%*	*10.8%*
Coal	0.0%	2.1%
Large Hydroelectric	3.4%	9.2%
Natural Gas	24.7%	36.4%
Nuclear	8.3%	9.2%
Other	0.1%	0.1%
Unspecified Power[3]	30.3%	7.1%
TOTAL	100%	100%

[1] Eligible renewable percentage does not refer to the RPS compliance.
[2] Large hydroelectric plants generate more than 30MW. Small hydro plants generate under 30MW and qualify as "renewable energy" under the RPS.
[3] Unspecified power is electricity purchased through open market transactions and cannot be traced to a specific source of electricity.
Source: SCE 2022 Power Content Label

In 2022, electricity distributed throughout San Bernardino County was primarily sourced from natural gas power plants (8,187 GWh), renewables (3,566 GWh), large hydroelectric plants (551 GWh), and coal (273 GWh).[5]

Natural Gas Service

Natural gas is provided to the City by the Southern California Gas Company (SoCal Gas) and is used for home heating, water heating, laundry dryers and gas stoves, as well as for generating electricity. SoCal Gas supports the development

[5] Total Generation by Type and County 2022, California Energy Commission, August 10, 2023.

of renewable natural gas (RNG) resources which are derived from methane generated by landfills, composted food waste, waste from livestock and dairy facilities, and wastewater treatment plants. RNG can be captured and transported along existing SoCalGas gas pipelines. Senate Bill 1440 sets biomethane or RNG procurement requirement targets for natural gas producers in California.

Transportation Fuel

In California, transportation fuels account for approximately one-half of the State's GHG emissions and result in significant impacts on air quality, environmental health and public health. The Division of Fuels and Transportation within the California Energy Commission oversees three key programs that aim to reduce emissions, diversify the transportation fuel supply, and reduce reliance on petroleum-based fuels. The Clean Transportation Program invests about $100 million annually on research and fuel infrastructure projects. The Low Carbon Fuel Production Program invests in new and expanded renewable ultra-low carbon fuel production at commercial-scale advance fuel production facilities. The School Bus Replacement Program provides funding to replace diesel school buses in low-income communities with cleaner fuel buses.

The California Air Resources Board (CARB) developed a computer-based model called EMFAC (EMission FACtor) to estimate emissions from on-road motor vehicles. EMFAC also provides data on vehicle activity, such as vehicle miles traveled (VMT) by region. According to EMFAC, the 2024 daily VMT for all fuel types and vehicle classes in San Bernardino County was estimated to be 59,483,118 miles per day.[6]

2.7.6 Project Impacts

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

If a project results in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation, then the project would have a significant impact on energy resources.

[6] EMFAC2025 v2.0.0, accessed October 2025. Scenario Analysis, San Bernardino County, 2024. https://arb.ca.gov/emfac/scenario-analysis/generate-template.

Solar Project Impacts

Construction Energy Demands

The Solar Project would primarily consume transportation fuel during site preparation, grading, solar field construction, and gravel application for the access road. The primary energy source during construction would be petroleum fuels (i.e. gasoline and diesel), which would be used for the operation of heavy equipment, manufacturing and transport of materials, and transport of construction workers. Electricity would be used to a lesser extent, in order to power electric equipment, worksite lighting, and temporary worksite offices.

The use of construction equipment and construction worker trips would represent a "single-event" fuel demand and would not require an on-going long-term demand for fuel resources. In addition, the equipment used for Project construction would conform to CARB regulations and California emissions standards intended to clean up construction equipment fleets by retiring older models for newer, cleaner models. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Overall, gasoline and diesel fuels consumed for transportation during construction of the Project would be temporary and would not be wasteful or inefficient. Therefore, impacts would be less than significant.

Operational Energy Demand

Transportation Energy: Once operational, the Solar Project would be unmanned and would require transportation fuel consumption for maintenance worker trips to the site approximately three times per year. Assuming an average one-way trip length of 50 miles, or 100 miles including the return trip, and a service vehicle mileage per gallon of gasoline equivalent rate of 6.8 mpg[7], the potential consumption of fuel during travel to service the Solar Project site could be 14.7 gallons of gasoline equivalent to complete a service trip, or 44.1 gallons annually. Of the County's daily VMT of 59,483,118 miles, 474,408 daily VMT were attributed to Class 4-6 medium-duty diesel trucks (T6 Instate Delivery Class, Other Class, and Utility Class 4-6 Diesel). Assuming the same mileage per gallon of gasoline equivalent rate of 6.8 mpg, medium-duty trucks in the County consumed the equivalent of 69,765.88 gallons of gas a day, or 25,464,5474 gallons a year. The Solar Projects annual demand of 44.1 gallons represents 0.0001 percent of the County's medium-duty truck fuel demand in 2024.

[7] Assumes maintenance of the site would require a medium-duty Class 4-6 vehicle with an estimated 6.8 mpg of gasoline equivalent per the U.S. Department of Energy Average Fuel Economy by Major Vehicle Category for "Delivery Trucks". https://afdc.energy.gov/data/10310, accessed October 2025.

Solar Energy: A solar facility is labeled with a nameplate energy capacity factor, which is the theoretical maximum possible energy output a solar facility could produce if it operated at full capacity 24 hours per day during 365 days per year. However, solar power systems typically produce only a percentage of their nameplate capacities due to their intermittency, system losses (from soiling, heat and friction, wiring malfunctions, system degradation), regional solar radiation factors, and direct current to alternating current conversion factors. A solar facility's capacity factor is the measure of a facility's actual energy output compared to the maximum possible output and is expressed as a percentage. The factor is derived from dividing the actual energy produced by the maximum possible amount of energy at full capacity (nameplate capacity). According to the US EIA, utility-scale photovoltaic power plants in California have an average capacity factor of 25.6 percent.[8]

Under ideal conditions with no system losses, the theoretical maximum energy output in kWh is determined by multiplying the nameplate capacity by the total number of peak sun hours in a year. Assuming an average of 6.5 peak sun hours per day in California[9], the daily output is 325,000 kWh (50,000 kW × 6.5 h). Over a 365-day year, this results in an annual maximum potential of 118,625,000 kWh (325,000 kWh/day × 365 days). To determine a more accurate energy output, the National Renewable Energy Laboratory (NREL) PVWatts Calculator, which assumes a default system loss of 14.08%, was used to calculate the Solar Project's power generation.[10] The PVWatts Calculator estimates that the Project would generate an average of 93,050,290 kWh per year and thus offset this amount of energy generated by nonrenewable energy sources.[11]

A study conducted by the NREL which analyzes productivity degradation of photovoltaic systems over time found that on average, large energy facilities lose 0.75% of their production capacity per year.[12] Exposure to environmental

8 *Capacity Factors and Usage Factor at Electric Generators: Total (all sectors)*, Table F38, 2023, US Energy Information Administration, https://www.eia.gov/state/seds/sep_fuel/html/pdf/fuel_cf.pdf accessed October 2025.

9 Kielar, H. (2023, March 30). *Guide To Peak Sun Hours*. GreenLancer. https://www.greenlancer.com/post/peak-sun-hours

10 System losses account for performance losses you would expect in a real system. The default values (percentage) for the system loss categories used in the PVWatts Calculator are as follows: soiling (2), shading (3), mismatch (2), wiring (2), connections (0.5), light-induced degradation (1.5), nameplate rating (1) and availability (3).

11 *PVWatts Calculator*. Pvwatts.nrel.gov. https://pvwatts.nrel.gov/.

12 National Renewable Energy Laboratory, *How Extreme Weather and System Aging Affect the US Photovoltaic Fleet*, January 24, 2024, https://www.nrel.gov/news/program/2024/how-extreme-weather-and-system-aging-affect-the-us-photovoltaic-fleet.html#:~:text=In%202022%2C%20in%20their%20first,End%20of%20interactive%20chart , accessed October 2025.

elements degrades equipment and leads to slight losses in energy production. Productivity loss is greater in warmer climates than in cooler climates. After the first year, the amount of electricity generated by the Solar Project could decline annually by 0.75%.

The following numbers represent the Solar Projects production capacity assuming a 0.75% annual decline over 30 years, and assuming no efficiency upgrades or panel replacements:[13]

Year 1: 93,050,290 kWh saved
Year 10: 86,311,953 kWh saved
Year 20: 80,058,088 kWh saved
Year 30: 74,258,243 kWh saved

Net Energy Impacts: While the Solar Project would consume energy mostly in the form of transportation fuel during maintenance activities, it will produce more energy that it consumes through the production of electricity. To make a direct comparison between the amount of energy consumed and the amount of energy conserved during the operational phase, the gallons of gasoline fuels (equivalent) consumed may be converted to MWh. Table 2.7-2 compares the MWh equivalent of fuel consumed during annual maintenance activities to the MWh of electricity generated and thus conserved during the first year of operation. The total net energy produced by the Solar Project after accounting for maintenance fuel demands is equivalent to 93,048.69 MWh. Therefore, energy consumption would not be wasteful or inefficient, and the Project would have a net beneficial impact on energy sources.

Table 2.7-2
Solar Project Net Energy Production

Fuel Type	Annual Fuel Consumption	Conversion to MWh[1]	Solar Project Annual Energy Output 1st Year	Net Energy Produced
Gasoline Equivalent	44.1 gallons	1.61 MWh	93,050.30 MWh	93,048.69 MWh
1. 1 gallon of gasoline = 0.0366 MWh.				

Residential GPA Impacts

Construction
The proposed Project does not include the construction of single-family homes on the new RS-1 designation (60 acres) south of the Solar Project. Although the

13 Calculation: kWh saved = 93,050,290 x (1-rate)years

proposed GPA would redistribute residential density by concentrating it on the southern half of the site rather than the northern half, the overall Project would maintain the site's existing development capacity of 119 residences. Therefore, similar construction activities would occur on the site but would now be concentrated on the southern parcel as opposed to the northern parcel.

Similar to the Solar Project, future buildout of the residential portion of the site would primarily consume transportation fuel during site preparation, grading, building construction, paving and roadway construction, and architectural coatings. The primary energy source during construction would be petroleum fuels (i.e. gasoline and diesel), which would be used for the operation of heavy equipment, manufacturing and transport of materials, and transport of construction workers. Electricity would be used to a lesser extent, in order to power electric equipment, worksite lighting, and temporary worksite offices.

The use of construction equipment and construction worker trips would represent a "single-event" fuel demand and would not require an on-going long-term demand for fuel resources. In addition, the equipment used for construction would conform to CARB regulations and California emissions standards intended to clean up construction equipment fleets by retiring older models for newer, cleaner models. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Overall, gasoline and diesel fuels consumed for transportation during construction activities would be temporary and would not be wasteful or inefficient. Therefore, impacts would be less than significant.

Operations
Future operation of the 119 residences would consume electricity, natural gas, and transportation fuel energy.

Transportation Energy: Once operational, the 119 residences would generate an average of 1,123 daily weekday trips for an annual total of 3,565,301 VMT (see Appendix C for CalEEMod outputs). Assuming the average passenger vehicle gas mileage rate of 24.4 mpg[14], residential buildout could consume 146,118 gallons of gasoline (equivalent) annually, and a nominal amount of diesel fuel. Of the County's daily VMT of 59,483,118 miles, 44,199,963 daily VMT were attributed to passenger vehicles (Light-Duty Autos (LDA), Light-Duty Trucks (LDT1 and 2), Light-Heavy-Duty (LHD1 and 2), and Motorcycles (MCY)). Assuming the same mileage per gallon of gasoline equivalent rate of 24.4 mpg, passenger vehicles in the County consumed the equivalent of 1,811,473 gallons of gas a day, or 661,187,971

[14] U.S. Department of Energy Average Fuel Economy by Major Vehicle Category https://afdc.energy.gov/data/10310, accessed October 2025.

gallons a year. The 119 residences' annual demand of 146,118 gallons represents 0.022 percent of the County's passenger vehicle fuel demand in 2024.

Electricity/Natural Gas Demands: At build out, the CalEEMod tool (see Appendix C for CalEEMod outputs) shows that the total annual electricity consumption of 119 residences would be 905,545 kWh and the total annual natural gas consumption (some of which is used during electricity consumption) would be 3,723.476 MMBtu. New development in the future will be subject to Building Code energy efficiency requirements, which are substantially more stringent than those applied to existing housing in the City, and will result in lower energy use when compared to historic use by residential units in the City. Tables 2.7-3 and 2.7-4 provide summaries of the Project components' energy use.

Table 2.7-3
Residential GPA Operational Total Annual Electricity Consumption for 2030

Jurisdiction	2030 MWh Annual Consumption	Project Percentage of 2030 City and County Consumption
Residential Buildout	905.545[2]	
Twentynine Palms[1]	96,272	0.94%
San Bernardino County[1]	15,482,994	0.0058%

1. Table 4-3, Electricity Consumption by Jurisdiction, San Bernardino County Greenhouse Gas Reduction Plan – Appendices. March 2021.
2. Conversion of kWh to MWh. 1 MWh = 1,000 kWh.

Table 2.7-4
Residential GPA Operational Total Annual Natural Gas Consumption for 2030

Jurisdiction	2030 MMBtu Annual Consumption	Project Percentage of 2030 City and County Consumption
Residential Buildout	3,723.476[2]	
Twentynine Palms[1]	214,707	1.73% of City's consumption
San Bernardino County[1]	48,342,177	0.0077% of County's consumption

1. Table 4-4, Natural Gas Consumption by Jurisdiction, San Bernardino County Greenhouse Gas Reduction Plan - Appendices, March 2021.
2. Converted kBTU to MMBtu. 1 MMBtu = 1,000 kBtu

It should be noted that the overall density of residential development proposed by the Project is the same as that which would result under existing zoning; therefore, the Residential GPA would not result in an increase in anticipated energy use as compared to the existing build out condition.

Summary

In summary, the Solar Project would generate approximately 255 MWh of energy per day during the operational phase,[15] or 93,050,290 MWh during the first year, while consuming approximately 1.61 MWh of energy annually during ongoing maintenance activities. Operation of the 119 residences would consume the equivalent of 7,344.708 MWh annually. Because the overall density of the proposed residential development would be the same as the that currently allowed under the General Plan, there would be no net increase in residential energy use. With improvements in building and appliance energy efficiency, and rooftop solar mandates, the new homes would likely consume less energy than expressed in the CalEEMod unmitigated totals discussed above in this analysis. The eventual development of up to 119 residences would result in an incremental increase to the County's overall consumption of energy, however it would not be an exceedance of previously planned growth for the region and the City because the Residential GPA would maintain the site's existing development capacity of 119 residences. When a residential project is planned for this Project site, a new project-specific CEQA analysis will be conducted.

Impacts from the construction and operation of the Solar Project and the Residential GPA would result in a net positive impact with regard to energy, and would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Impacts would be less than significant.

2.7.7 Mitigation Measures

Given the Project's less than significant impacts, no mitigation measures are required.

2.7.8 Significance After Mitigation

Project-level energy impacts would be less than significant.

2.7.9 Cumulative Impacts

The assessment of potential cumulative impacts on energy resources involves the consideration of energy consumption for the proposed Project in addition to impacts stemming from past, present, and future projects, and whether the combined energy uses from all project results in wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

[15] Calculation is based on the NREL PVWatts estimation of 93,050,290 kwh annual output, which is divided by 365. The daily output would be 254,932 daily kwh.

The Project consists of a commercial solar field and a residential GPA but does not propose the development of residential units at this time. Overall, the Project will result in net positive electricity generation. Future residential development on site, and all other new projects in the City, will be subject to the Building Code energy conservation standards in place when development occurs. These standards, now enforced through the Calgreen Code, require the installation of rooftop solar, and aim to have new development be net-zero producing in the future. As the energy code is updated, future cumulative projects in the City will be required to comply with the more stringent requirements, which will reduce residents' and businesses' use of energy in buildings. Similarly, as vehicle fuel consumption standards increase because of State mandates, gasoline consumption will also decrease in the future. As a result of State mandates, therefore, cumulative impacts associated with the wasteful consumption of energy will remain less than significant.

2.8 Geology and Soils

2.8.1 Introduction

This section of the EIR describes existing conditions with regard to local and regional geology and soils within the Project planning area and analyses the potential geological impacts to the proposed Project. A wide range of data and information was gathered from the City Updated 2012 General Plan, General Plan Environmental Impact Report, California Department of Conservation database, and other resources in researching and analyzing the Project and its potential effects. These include detailed analysis of regional and local geology, soil, and seismic conditions.

2.8.2 Thresholds of Significance

Based upon Appendix G of the CEQA Guidelines, the proposed Project would be significantly affected by soils and/or geological conditions if it would:

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?
   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 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?

The Initial Study determined that the Project would result in "No Impact" for threshold questions a)i, a)iii, d), e) and f) above (please see Appendix A). There are no known active faults within or in proximity of the Project site. Neither seismically induced ground failure nor liquefaction are expected to occur at the site. The site is not located on a geological unit or soils type that would result in landslides, lateral spreading, subsidence, liquefaction or collapse. The site does not harbor expansive soils, no on-lot septic tanks are planned, and there are no unique paleontological or geologic features on site that could be adversely impacted by the Project. Therefore, these threshold questions are not further analyzed in this EIR.

2.8.3 Regulatory Framework

Federal

There are no federal regulations associated with geology and soils that would be applicable to the proposed Project.

State

Alquist-Priolo Earthquake Fault Zoning Act

Established in 1972, the Act directs the Department of Conservation, California Geological Survey (CGS) to identify and determine regulatory "Zone of Required Investigation" to reduce the probability of harm and property damage from earthquake induced ground failure. The Act prohibits developments intended for human occupancy to be located near an earthquake hazard zone. The Act requires cities and counties, affected by hazard zones, to adopt and administer zoning, ordinance, rules, and regulations for safe development in the built environment. As such, projects proposed within a hazard zone are required to conduct a site-specific investigation and, if necessary, prepare a mitigation plan, before land use approval is granted.

Seismic Hazard Mapping Act (SHMA)

Adopted in 1990 and enforced by the California Geological Survey (CGS), the Act aims to reduce geologic threats to public health and safety by mandating the CGS to identify and map areas prone to earthquake hazards including liquefaction, landslides, and amplified ground shaking. Under the Act, a Geologist from the Seismic Hazard Program must gather existing geological, geophysical, and geotechnical data to assess the region and compile a Seismic Hazard Zone Map in which areas prone to liquefaction and landslides are delineated. The State Mining and Geology Board (SMGB), created by the Act, serves as a regulatory and policy body that expands on the State's actions including, but not limited to geologic and seismologic hazards.

Similar to the Alquist-Priolo Earthquake Fault Zoning Act, the SHMA prohibits the construction of new projects in areas designated as hazard zones. Prior to city or county approval of a land use permit, if the potential exists for geologic hazards, a site-specific investigation must be conducted to evaluate the project's exposure to liquefaction and landslides, and if deemed necessary, a mitigation plan adequately addressing concerns must be prepared.

California Building Code (CBC)

The CBC, codified as CCR Title 24, Part 2, establishes building standards intended to safeguard the public and general welfare by imposing minimum requirements on the structural strength and general stability of buildings' design and construction. The California Building Standards Commission (CBSC) is responsible for enforcing and coordinating these building standards aimed at regulating and controlling the design, location, reinforcement material, construction, use, occupancy, and maintenance of new and existing buildings, structures, and certain equipment. The CBC amendments are based on the International Buildings Codes (IBC) from the International Code Council.

These regulatory standards apply to the construction, alteration, movement, replacement, and demolition of all buildings and structures. In addition, all state agencies and regional governing bodies must remain in compliance with the CBC when creating and enforcing their regulatory standards to ensure consistent structural safety throughout the state.

California Code of Regulation, Title 14, Division 2, Chapter 8, Article 10

Section 3722 of the California Code of Regulation (CCR) requires the CGS to identify and create one or more statewide maps that indicate the probability for a seismicly induced hazard such as liquefaction, landslide, and amplified ground shaking to occur. The map must show ground shaking levels with at least 10% probability of being exceeded in 50 years.

California Public Utilities Commission General Order 128

The State's Public Utilities Commission promulgates standards and requirements for operators of electric systems. General Order 128 establishes standards and requirements for the construction of underground utility lines, including lines such as the underground connections required within the Solar Project, and the gen-tie lines connecting to the Corodean substation.

Local

City of Twentynine Palms Municipal Code

Chapter 18 of the City Municipal Code adopts the California Building Code which sets strict construction and building standards as to ensure the highest safety standards are enforced, at minimum.

City of Twentynine Palms General Plan

The General Plan Update Safety Element identifies and maps local geological hazards including active fault zones, seismically induced liquefaction, landslides, ground failure, soil settlement, collapsible and expansive soils, and subsidence. The General Plan aims to limit land use in geologic hazard areas to reduce the number of people, buildings, and infrastructure exposed to potential harm or destruction. Under the Land Use Element, the range of land uses is limited to exclude or limit development in hazardous areas where development poses an unreasonable risk.

Safety Element

Goal SF-1 Minimize injury, loss of life, property damage and economic and social disruption caused by seismic shaking and other earthquake-induced hazards, and by geologic hazards such as slope instability, compressible and collapsible soils, and subsidence.

Policy: SF-1.1 New habitable structures shall be designed and built in accordance with the most recent California Building Code.

City of Twentynine Palms Local Hazard Mitigation Plan (LHMP)

Updated in 2020 and enforced by the City, the LHMP identifies potential natural hazards within Twentynine Palms' planning area and sets forth mitigation measures to protect public safety and critical infrastructure. The Plan identifies earthquakes, flooding, wildfires, windstorms, and drought as natural hazards likely to occur. Earthquake and flood hazards are ranked as a high priority concern for the City due to the local geography and topography that increases the likelihood of strong ground shaking and flooding to occur. In response, the LHMP proposes measures, including earthquake retrofitting and flood control walls, to avoid or, at the very least, substantially reduce impacts.

City of Twentynine Palms Emergency Operation Plan

Established in 2013, the Plan designates the San Bernardino County Sheriff's Department responsible for the evacuation process in the City.

2.8.4 Environmental Setting

Regional Faults and Seismic Activity

Southern California includes active, potentially active, and inactive faults. According to the CGS, active faults are those that have shown geologic evidence of surface displacement within the past 11,700 years (Holocene epoch). Potentially active faults are those that have shown displacement within the past 1.6 million years (Quaternary epoch) and inactive faults are those that have shown no evidence of displacement within that period. Active faulting causes most of the earthquake hazards in the region. Southern California is host to blind thrust faults which may have no surface level expression that define their location or trajectory but have a high potential for faulting, such as occurred in the 1994 Northridge earthquake.

Regional Geology

Twentynine Palms is part of the Morongo Basin subdivision of the Mojave Desert. The basin spans approximately 1,400 square miles from the San Bernardino Mountains and the Little San Bernardino Mountains to the west to the Wonder Valley to the east. The basin is generally bound by Joshua Tree National Park to the south and the MCAGCC to the north. The region reaches a maximum elevation of 3,500 feet in the vicinity of the San Bernardino Mountains and the Little San Bernardino Mountains and lowest elevations of about 1,400 feet in the vicinity of Wonder Valley.[1]

The region encompassing the City of Twentynine Palms is influenced by two major geologic fault zones, including the Mesquite Lake Fault and the Pinto Mountain Fault. The Mesquite Lake Fault lies 5.30± miles east of the Project site and is an active dextral strike-slip fault, part of the Eastern California Shear Zone that joins the eastern Pinto Mountain Fault Zone.[2] A dextral strike-slip fault is a type of fault along which two blocks of rocks are displaced to the right relative to each other and along the strike of the fault plane. Displacement in this case is almost exclusively horizontal.

The Pinto Mountain Fault is an active strike-slip fault zone that lies 1.50± miles to the south and occurs between the Mojave Desert and Transverse Ranges, creating a geomorphic boundary separating the two provinces.[3] A strike-flip fault is a type of fault on which two blocks of rocks slide laterally to opposing sides. Usually, this type of rock displacement occurs in a horizontal direction. The Pinto

1 Morongo Basin Conservation Priorities Report prepared by Sonoran Institute, 2012.
2 U.S. Geologic Survey Quaternary Fault and Fold Database, "Mesquite Lake Fault", https://earthquake.usgs.gov/cfusion/qfault/show_report_AB, accessed March 2024.
3 U.S. Geologic Survey Quaternary Fault and Fold Database, "Pinto Mountain Fault Zone", https://earthquake.usgs.gov/cfusion/qfault/show_report, accessed March 2024.

Mountain Fault and the Mesquite Lake Fault are considered "active" and have the potential to generate a magnitude ≤7.0± earthquake and, in turn, trigger seismic-induced hazards including strong ground shaking, landslides, and liquefaction. Both fault zones are identified on the Alquist-Priolo Earthquake Fault Zone maps as per the latest mapping by the California Department of Conservation.

The City of Twentynine Palms is located approximately 24 miles north of the San Andreas Fault zone in the Coachella Valley. The San Andreas Fault is a boundary between the Northern Pacific and North American tectonic plates. The fault travels northwestward from the Gulf of California and continues northwest, continuing offshore in the vicinity of Eureka, California.[4] Along the fault, there is a complex system of branching faults that includes the Eureka Peak and Burnt Mountain Fault found within the Town of Yucca Valley and located approximately 16 miles southwest of the Project site. Moderate to severe earthquakes have been associated with the San Andreas Fault system. Large earthquakes reaching a maximum magnitude of 8.0 on the Richter scale are considered possible and anticipated from the San Andreas Fault. Given the City's distance from the San Andreas Fault, less than substantial damage is expected to occur in the event of faulting-induced ground shaking. [5]

Based on the Twentynine Palms Local Hazard Mitigation Plan, the City ranks natural hazards on a scale of priority between 1 (highly likely) to 4 (least likely). Fault-induced earthquakes are ranked a priority 1 and determined to have the potential to cause catastrophic impacts in Twentynine Palms. [6] The Mesquite Lake Fault and the Pinto Mountains Fault are two main faults in the City Twentynine Palms because of their earthquake magnitude potential and geological route crossing through and near urban development. Secondary faults include Twentynine Palms Mountain Fault, East/West Pisgah-Bullion Mountain Fault, and Dog Wash Fault, located outside the City's Sphere of Influence (SOI) to the east between Twentynine Palms Mountain and Valley Mountain. Additional information of potential fault rupture zones in or near Twentynine Palms is summarized in Table 2.8-1.

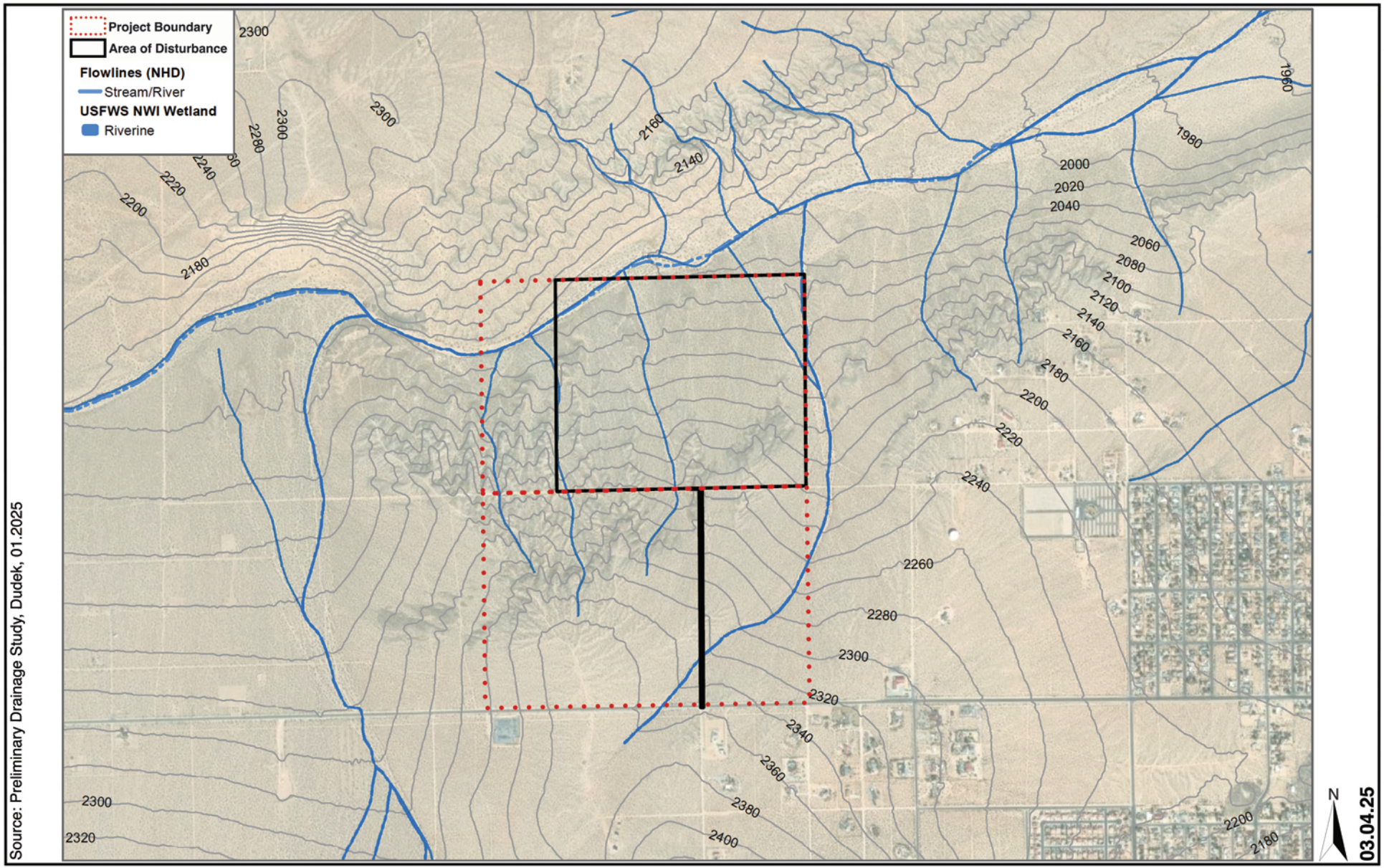
4 Britannica, "San Andreas Fault", https://www.britannica.com/place/San-Andreas-Fault, accessed 2024.
5 City of Twentynine Palms General Plan, Safety Element, 2012.
6 City of Twentynine Palms Local Hazard Mitigation Plan, 2021.

Table 2.8-1
Summary Fault Rupture Potential

Fault Name	Classification	Alquist-Priolo Fault Zone
Pinto Mountain	Active	Yes
Mesquite Lake	Active	Yes
Airfield	Active	Yes
East/West Bullion Faults	Active	No
Dog Wash	Active	No
West Calico	Active	No
Hidalgo	Active	No
Copper Mountain	Active	No
Source: Twentynine Palms 2010 General Plan Environmental Impact Report, accessed April 2024.		

Soils

The Mojave Desert is an arid region consisting of alluvial fans, expansive desert plains, dry lakebeds, and scattered mountain ranges. Located within an arid region of alluvial fans, desert plains, dry lakebeds, and scattered mountain ranges, the City's soil type is predominantly comprised of water-laid sand, silt, and gravel. In some parts of the City, these soil types are susceptible to geologic hazards such as slope instability and collapsible soils and are discussed in greater detail in Section 2.8.5, below. As can be seen on Exhibit 2.8-1(Site Topography) the Project site gently slopes to the north and northeast.



TERRA NOVA®
PLANNING & RESEARCH, INC.

Site Topograhy
Solar Field Project
Twentynine Palms, California

Exhibit
2.8-1

2.8.5 Existing Conditions

Geologic Conditions

The Project site, located in the northwestern portion of the City, is in a wedge-shaped fault block known as the "Mojave Block". The Mojave Block is located between two distinct geomorphic provinces, the Eastern Transverse Ranges Province and the Mojave Desert Province. The Eastern Transverse is a region of steep mountain ranges that include Joshua Tree National Park, the Little San Bernardino Mountains, the Pinto Mountains, and other mountain ranges to the southeast. Tectonically, the Mojave Block is bound by the Garlock Fault to the north, the San Andreas Fault system to the west and southwest, and the Granite Mountains and Packard Well Faults to the east.[7] The Pinto Mountain Fault is the closest active fault to the Project, approximately 1.50 miles to the south.

On-Site Subsurface Conditions

Project soils are of the Morongo series, which consists of very deep, somewhat excessively drained soils that formed in alluvium derived from granitoid and/or gneissic rocks. Morongo soils are on alluvial fan aprons, inset fans, fan remnants and in drainageways. Slopes range from 2 to 30 percent.[8] Soil moisture is usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative from July to September following summer convection storms.

Groundshaking

At 1.5 miles to the south, the Pinto Mountain Fault is the nearest fault zone to the Solar Project site and has the potential to generate a X-XI in the Modified Mercalli Intensity (MMI) scale. According to the City General Plan Safety Element (Table SF-2) an earthquake of this magnitude can cause severe structural damage, ground instability, underground pipeline ruptures, and landslides. Impacts of ground shaking are dependent on intensity and duration of the earthquake, distance from the epicenter and site conditions. The effects of an earthquake along the Pinto Mountain fault at the Project site would be substantially reduced by distance.

Static Settlement and Compression

Static settlement occurs when loose, granular soil is shaken, the soil grains become more tightly packed, resulting in a reduction of the thickness of the soil column and damaging the structures placed on top these sediments. Areas of

[7] California Department of Conservation, Fault Activity Map of California, https://maps.conservation.ca.gov/cgs/fam/, Accessed March 2024.

[8] US Department of Agriculture Soil Survey Database, https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed March 2024.

Twentynine Palms are underlain by young alluvial sediment, aeolian (wind) sediments, and artificial fill or poorly consolidated and uncompacted soils which may be susceptible to earthquake-induced settlement. The General Plan EIR Geologic Map (Exhibit 4.6.3) suggests that the Project site is found on older alluvium which indicates poor to moderate consolidated silt, sand, and gravel, which has a low potential for settlement.

Groundwater

The Project site is within the Twentynine Palms Valley Groundwater Basin. Groundwater level data between 1940 and 2013 identified ground water levels within the site's vicinity range between 194 feet below ground surface to 205 feet below ground surface (see Appendix F).[9] Current groundwater level trends in the area assure the lack of shallow groundwater in proximity to the site.

Liquefaction

Liquefaction typically occurs in shallow ground water, at ≤50 feet below ground surface, in an area where fine- to medium-grained sandy to silty soil and shallow groundwater occur. In the event of a moderate to strong earthquake, liquefaction prone areas lose strength, causing structures to collapse or sink. Liquefaction features have been identified across the Pinto Mountain Fault Segments, near the urban center of Twentynine Palms[10] and 4 miles to the northeast of the Project site. Given the site's distance from the high hazard liquefaction zone and the depth to groundwater, the Project soil does not appear to be susceptible to liquefaction.

Seismically Induced Slope Failure and Landslides

Strong ground shaking can worsen existing unstable slope conditions that can potentially result in an earthquake induced slope failure. Slope failures are common on very steep slopes, or involving surficial soils, and the uppermost weathered rock in moderate to steep hillside terrain. Landslides, on the other hand, are movements of relatively large landmasses caused by slope instability including slope height, steepness, shear strength, and orientation of weak layers in the underlying geologic unit.

Hazards associated with seismically induced slope failure and landslide in the City occur primarily along the neighboring mountains and hills including Campbell Hill, Donnell Hill, and other low, unnamed hills.[11] The Project site is located within a relatively flat open desert terrain where there are no mountains or hillside posing a significant seismically induced slope failure or landslide hazard.

9 Dudek, Preliminary Drainage Study for E-Group PS Solar Project, January 2025.
10 City of Twentynine Palms General Plan, Map showing the Seismic Hazards, Exhibit SF-1, 2012.
11 City of Twentynine Palms General Plan, General Slope Instability Potential Within Twentynine Palms, Table SF-4, 2012.

Wind and Soil Erosion

Erosion is the gradual wearing away of landmasses through wind (aeolian), water (fluvial), gravity (inertial), and other processes and is a prominent issue for communities built on or near alluvial fans or within hillside areas. Young, unconsolidated alluvial sediments are found in the City and are highly susceptible to wind and water erosion, especially when disturbed. Development often increases the potential for erosion by removing protective vegetation, altering natural drainage patterns, and constructing cut and fill slopes that may be more susceptible to erosion than the original, natural slope condition. Development also reduces the surface area available for infiltration, leading to increased runoff and erosion downstream.[12]

The site is currently vacant desert land. There are natural drainage channels throughout the site, caused by storm runoff that has gradually carved and formed ephemeral channels. Disturbance of the site's soils and drainage features by the Project may increase the site's probability for soil erosion.

Expansive Soil

Expansive soil occurs in fine-grained soil containing clay or silt. Most of Twentynine Palms is underlain by alluvial sediments that are comprised predominantly of silty sand, sand, and gravel. These sediment units have low expansion potential because they do not contain significant amounts of clay. The soil found on the Project site consists of older alluvial sediment. No trace of silt or clay has been observed or recorded onsite.

Collapsible Soils

Young wind-deposited sand and silt, and alluvial fans or debris flow sediment deposited during flash floods are sediment types subject to collapse. Typically, these soils contain clay, silt, or carbonate bonds. Soil collapse increases when wetted by irrigation or a rise in groundwater. In addition, the weight of a structure can induce rapid settlement. The City 2010 General Plan EIR states that generally the planning area consists of young alluvial fan and aeolian sediments where susceptibility to soil collapse is moderate to high due to the soil's granular texture, dry conditions in the upper section, and as a result of having been deposited rapidly. The Project site soil type contains older alluvial sediment which is less prone to collapse. The lack of onsite irrigation and the absence of younger alluvial sediment renders the Project's susceptibility of collapsible soil negligible.

Ground Subsidence

Ground subsidence is settlement with little to no horizontal movement and typically results from extracting water by pumping from the soil column. Ground

[12] 2010 Twentynine Palms General Plan Environmental Impact Report, August 2010.

subsidence can cause foundation and structural damage. The Twentynine Palms region is vulnerable to land subsidence from ongoing regional groundwater overdraft, where historically groundwater has been withdrawn at a faster rate than it has been replenished. The local water provider is the Twentynine Palms Water District (TPWD). TPWD relies on groundwater to meet customer demand, and does not import water for replenishment.

Seiches and Tsunamis

Given Twentynine Palms' inland location and distance of 101± miles from the Pacific Ocean, the tsunami hazard in the City is negligible. Additionally, the lack of large bodies of water in the City of Twentynine Palms and the Project area also indicates that the hazard associated with seiches is negligible.

Paleontological Resources

Paleontological resources are fossil remains of ancient life that once occupied the environment. The County of San Bernardino has an extensive record of fossils starting in the Jurassic period, 150 million years ago.[13] The Los Angeles County Natural History Museum has identified the presence of vertebrate fossil localities in the planning area of Twentynine Palms. Elevated terrain towards the southern and western portion of the City consists of igneous and metamorphic rocks that do not contain fossils. The rest of the planning area is comprised of both younger and older Quaternary alluvial deposits that do not typically contain significant fossil remains.[14]

The soil type onsite contains older alluvial sediments, derived from the surrounding hills or drainages. At a maximum depth of approximately 7 feet, the Project will disturb the uppermost layer of older alluvial sediments where the probability of fossil specimens to occur are very low. Therefore, the likelihood of the Project to uncover or substantially impact a paleontological resource during the construction phases is very low.

2.8.6 Project Impacts

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

ii) Strong seismic ground shaking.

Solar Project Impacts

The Project site is not located on or near an active fault as shown by CDC's Alquist-Priolo Earthquake Fault Zones map and the City General Plan Exhibit SF-1 (Seismic Hazards Map). There are no fault lines that cross the Project site, nor is the Project

13 City of Twentynine Palms General Plan, Conservation and Open Space Element, 2012.
14 2010 Twentynine Palms General Plan Environmental Impact Report, August 2010.

within an Alquist-Priolo earthquake fault zone. The Project site could be subject to strong ground shaking in the event of the Pinto Mountain fault generating a magnitude 7.2 earthquake, thought to be the fault's maximum capacity. At such scale, the earthquake would generate an average peak acceleration of 0.65 g to 1.45 g or higher. Ground shaking at this level would cause substantial structural damage associated with a Modified Mercalli Intensity of IX (Heavy) and X (Very Heavy) which may include partial structural collapse, foundational shift and underground utility damage for older structures. Newer structures have a lower susceptibility to foundational or structural collapse because the State enforces strict development standards that prevent earthquake induced damage. As codified in the California Building Code, Chapter 16, Volume 2, Section 1604, development standards for "seismic design" are dependent on building type and location. The Solar Project will be reviewed and approved by the City's Building Department for compliance with Electrical Code and structural engineering for the panels and racks. All new developments are required to be designed and constructed in accordance with strength and resistance design standards so as to minimize the potential for structural damage to the greatest extent practical.

As shown in Exhibit 1-3 (Solar Project Site Plan), the Project would result in the installation of 160,000 solar panels on 720 ground mounted solar panel racks. The posts of the solar panel racks would be buried at a depth of 7 feet below ground. The panel racks will be interconnected with underground cabling, which will be installed in trenches and back-filled. The depth of these trenches is expected to be about 4 feet below ground.

To ensure the structural integrity of all structures, the Solar Project would be required to conform to the most recent state seismic design standards as required in the California Building Code and CPUC regulations, including site preparation and grading practices, adequate design of foundations, and requirements for the appropriate selection and use of construction materials. These requirements include foundation reinforcements, over-excavation and compaction of graded soils, and similar measures designed to reduce the impacts of ground shaking. A Preliminary Geotechnical Engineering Report was prepared for the Solar Project and is included as Appendix F. As indicated in that study, the findings were preliminary, and will require, as the City requires, final analysis based on the grading and building plans submitted to the City prior to construction.

The Solar Project will conform with state and local building and development standards, reducing substantial adverse effects from strong seismic ground shaking to less than significant levels.

Similarly, off-site improvements such as the extension of the site's driveway and inter-connection lines to the nearby electric substation, grading the driveway,

and installing a prefabricated steel bridge will be subject to the same State mandates. The driveway will be a compacted gravel road. Construction would be consistent with the driveway standards as codified in the City Municipal Code. The underground electrical wiring will be installed in accordance with state and local standards. Adherence to these standards would ensure off-site improvements do not pose a significant hazard associated with ground shaking. Under these mandatory requirements, off-site improvements are anticipated to cause less than significant impacts.

Residential GPA Impacts

This portion of the Project requires a change in land use for the eastern 60 acres of the site's southern 119± acre Rural Living (RL-5) parcel to Single Family Residential, 1 acre minimum (RS-1). The change in residential use would increase the allowed density on the property from 71 dwelling units to a maximum of 119 dwelling units. No development is proposed in conjunction with this GPA at this time. Residential units could be built in the future, when entitlement applications are filed, if the GPA is approved.

The 60 acres covered by the Residential GPA are located 1± mile north of the Pinto Mountain fault zone. At this distance, any future residential development could be exposed to strong ground shaking. Future subdivision(s) and development on this portion of the site will be subject to the same City and CBC standards as all other projects, including review under CEQA. The extent to which the development would be susceptible to strong ground shaking would be evaluated under City Municipal Code Section 18.01.020 and CBC Chapter 18 Volume 2 (Soils and Foundations) through the preparation of a site- and project-specific geotechnical study. The report must be prepared by a certified geologist licensed by the State of California and must evaluate the safety of the building site against hazards from earthquake, landslides, settlement, or slippage. Based on the report's conclusions, future residential development would be required to adopt recommendations (if any) so as to reduce the project's susceptibility to strong ground shaking. In addition, any future residential development on the property would need to conform with all applicable state and local seismic design standards, building codes, and local development standards as stated in the City Municipal Code Section 19.10.040 (Development Standards) and the City's CBC requirements. These provisions are intended to minimize the potential for seismic hazards within Twentynine Palms. Compliance to the most recent CBC and local building and development standards would therefore reduce impacts to less than significant levels.

Summary

As described above, the Project would be subject to strong ground shaking from seismic activity primarily from the Pinto Mountain fault. The subject site is not located within immediate proximity to an active fault zone. As such, structural damage associated with the strongest ground shaking from any seismic event would not occur on-site. Nonetheless, the Project is located one mile north from Pinto Mountain fault which will result in strong ground shaking. To ensure the structural integrity of the Project, the final design plan must conform to the most recent California Building Code and CPUC requirements and local building and development standards as stated by the City Municipal Code. All Solar Project related development as well as future residential development would be required to comply with all state and local building and development standards, which are explicitly designed to reduce the effects of strong ground shaking to less than significant levels.

iv) Landslides.

Solar Project Impacts

The Project site is not within a landslide susceptible area as identified by the City General Plan EIR Exhibit 4.6-6 (Hillside Overlay) nor is it listed in the General Plan EIR Table 4.6-1 (Slope Instability Potential) as an area within Twentynine Palms that provides the environment for slope instability to occur. Landslides have not been mapped on or adjacent to the site and evidence of landslide was not observed during review of aerial photographs. The Solar Project avoids the disturbance of the steepest natural slopes on the western portion of the site by concentrating development within 184± acres of the site's northcentral and northeastern portion, where the slopes and ridges are less pronounced.

Construction of the solar Project includes site preparation, grading, and installation of on-site equipment. These construction activities would alter the natural topography. However, these changes would not result in an increased risk for landslides considering the Project site is not located within proximity to significantly steep slopes, and/or rocky hillsides or mountainsides. The slopes in the site's western edge are not landslide hazard zones due by their low profile and loose sandy composition. The probability for seismically induced landslides occurring within the Solar Project area is considerably low.

To ensure the proposed structures are adequately supported, a preliminary geotechnical report was prepared, and a final report will be required consistent with CBC Section 1803. The report would evaluate the soil composition, strength, and load bearing capacity, and make recommendations on the design of the

structural foundation system. These recommendations would be implemented as part of grading and building permit review, and the Project would be required to demonstrate compliance with the report's findings. Under these regulatory standards, the Project would not expose life or property to landslide related damage, and impacts would be less than significant.

Proposed off-site improvements would occur within a relatively flat desert area consisting of loose/granular soil, dense natural vegetation, small undulations, and an ephemeral stream crossing the area's southern portion. The risk for landslide as it pertains to this area is negligible.

Residential GPA Impacts

As is the case for the Solar Project, any future residential project would be mandated to prepare a project-specific geological assessment according to City Municipal Code Section 18.01.020 and CBC Chapter 18 (Soils and Foundations). The report will evaluate the property's history of geologic hazards and determine its current probability for seismically induced landslides. The report will conclude with site-specific recommendations designed to offset any landslide hazard. Recommendations will be incorporated into project design to reduce the likelihood for landslide related impacts to less than significant levels.

Additionally, the residential project will be required to conform with state and local building and development standards as stated in the California Building Code and applicable standards outlined in City Municipal Code. These provisions are designed to set the minimum standard for avoiding the potential for existing geological hazards from causing structural damage to property and exposing occupants to adverse risk. Compliance with these standards will be evaluated by the City at the time of project entitlement, including further review under CEQA.

In all, the proposed GPA is not expected to increase the risk of seismically induced landslides for the southern parcel nor expose occupants to potential loss. Therefore, impacts related to landslides are negligible.

b) Result in substantial soil erosion or the loss of topsoil.

Solar Project Impacts

The Solar Project has the potential to cause soil erosion by wind and water. The site is predominantly underlain by Quaternary-age, relatively younger surficial sediments[15] likely deposited by the water flow passing through the ephemeral

[15] Notice of Preparation and Initial Study for E-Group PS Solar Project, 2024.

channels that traverse the 477± acre parcel. These sediments are susceptible to erosion given their dry, loose sandy and unconsolidated physical condition. Soil erosion may occur by natural means including strong winds and flooding. However, erosion is often accelerated through development by the removal of natural vegetation, altering natural drainage patterns, and construction cut and fill slopes that may interrupt the natural drainage flow and disturb the surface and thus increase the probability for both water and wind erosion.

The Solar Project will excavate and grade approximately 184± acres of the site's northeastern region, as well as the driveway from its southern boundary to Two Mile Road. The excavation will result in an estimate redistribution of 264,000 CY in landmass. Although the site will be extensively disturbed by the Project's construction, on-site drainage channels will be avoided. As shown in Exhibit 1-3 (Solar Project Site Plan), the 720 ground mounted solar panel racks will be arranged in such a way as to avoid the 2 ephemeral streams that travel along and through the development area (on- and off-site). On-site service roads would be arranged throughout the parcel to provide access to the solar panel equipment while avoiding contact with the drainage channels. However, an existing on-site wash will be crossed by a prefabricated concrete-support steel bridge. The lack of disturbance of the on-site drainage channels will ensure that the Project grading does not adversely affect the natural drainage pattern and increase the probability for water erosion.

A Stormwater Pollution and Prevention Plan (SWPPP) has been submitted for City review and approval which details the Solar Project's plan to reduce impacts related to water erosion during construction and throughout its operation. The SWPPP includes Project information and best management practices (BMP) such as stormwater runoff quality control measures, concrete waste management, watering for dust control, and construction of perimeter silt fences to reduce the potential for water erosion during construction.

Once operational, the Solar Project will be revegetated (see Section 2.5, Biological Resources), and storm flows will sheet flow across the site and in existing drainage channels. The revegetation will mimic the current native condition and control erosion from storm water across the site.

A water-free cleaning robot will be utilized on a regular basis to keep the solar panels clear from dust and debris. Water may be used on-site to power wash the panels after a major sandstorm. However, this would occur on an infrequent basis and thus, the use of water is unlikely to factor into the probability for water related soil erosion from occurring on-site. The potential for water erosion as a result of the Solar Project's construction and operation is therefore considered low.

Wind erosion during construction will be controlled by the implementation of MDAQMD's Rule 403, which requires the implementation of a dust control plan for the Project, including BMPs that would include site watering, silt fencing and other measures reviewed and approved by the MDAQMD and the City.

Although the Project intends to remove the natural vegetation on-site prior to construction, seedlings would be dispersed throughout the parcel after grading. The natural revegetation process would allow the plant root system to extend across the disturbed and loose soil and create a surface condition capable of withstanding strong winds and thus controlling the site's potential for soil erosion. Additionally, the service roads mapped throughout the parcel would consist of a 12" layer of compacted graded soil, with a thin layer of geotextile grip to stabilize the 11" layer of crushed gravel built on top. These layers will stabilize the soil and prevent wind erosion.

Residential GPA Impacts

The proposed GPA would not increase the southern parcel's susceptibility for soil erosion in and of itself. No development is proposed on the parcel at this time. As previously described, project-specific CEQA review will occur when residential development is proposed.

The soil forming the surface of the southern parcel is likely to be susceptible to wind and water erosion as discussed above. As is the case for the Solar Project, a geological technical report by a qualified geologist is required where the property's characteristics and susceptibility for geological hazards, including soil erosion, would be evaluated. In addition, future residential projects would be required to develop SWPPPs, dust control plans and BMPs consistent with City Municipal Code Section 19.64.030 (Clearing and Plant Removal). At buildout, future residential projects will include soil-retaining features such as landscaping, paved driveways, roadways and sidewalks, fencing, and local stormwater management systems. The implementation of these soil erosion control features will limit the potential for wind and water erosion from causing a significant effect. Less than significant impacts are anticipated.

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.

Solar Project Impacts

Landslides
Question a) iv. of this Section, above, evaluates the Project's susceptibility for landslides and concludes with a low probability for impact. Less than a significant impact is anticipated with compliance with state and local standards.

Lateral Spreading

Lateral spreading is a type of liquefaction-induced ground failure as a result of displacement atop a liquified layer. Lateral spreading typically occurs on very gentle slopes and flat terrain.[16] The Project site consists of slopes formed by the movement of water through ephemeral channels across the property, especially in the northwestern portion. Although there are slopes at the site, there is no associated risk for lateral spreading given that groundwater is at a depth greater than 50 feet. The failure caused by liquefaction on slopes or any area within or near the property is considered low. Therefore, no impacts from lateral spreading are anticipated.

Subsidence

Land subsidence is the gradual settling or sinking of the ground surface as a result of groundwater extraction at a faster rate than replenishment. The Project site is not located within a land subsidence area as mapped by the U.S. Geology Survey.[17] The nearest land subsidence hazard zone to the Project site is Lucerne Lake, located approximately 52 miles northwest. Subsidence in this area would not affect the soil stability at the site. Disturbance related to construction and operation are not associated with inducing soil settlement and thus, implementation of the Project would have no effect on the site's probability for subsidence. No impact would occur.

Liquefaction

The Project is not located within a liquefaction hazards overlay as shown in the City General Plan Exhibit SF-1 (Seismic Hazards). The mapping indicates the presence of groundwater is at a depth greater than 50 feet from the surface and thus, no liquefaction potential exists. No impact would occur.

Collapse

Soil collapse typically occurs in Holocene-age soils that are supported by clay, silt or carbonate bands. When saturated, these sediment grains undergo rearrangement leading to a substantial and rapid settlement under relatively light loads. The Project area is predominantly underlain by Quaternary-aged relatively younger surficial sediments. These soil types are loose and granular in texture. The presence of clay, silt, and carbonate in the soil is probable but not to a significant extent so as to cause soil collapse on-site. A preliminary geotechnical report has been prepared for the Solar Project, and a final report will be required, as

16 U.S. Geological Survey, "Lateral Spread", https://www.usgs.gov/media/images/lateral-spread, accessed November 2024.

17 U.S. Geological Survey, Map showing Areas of Land Subsidence in California, https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html, accessed November 2024.

provided in the report and by City standards, when improvement and building permits are sought. As a result, impacts related to soil collapse will be less than significant.

Residential GPA Impacts

The proposed GPA would not inherently increase the risk for ground failure at the southern property including landslides, lateral spreading, subsidence, liquefaction or collapse. The risk for these geologic hazards was evaluated by the General Plan EIR which concluded that ground failure related impacts to residential development would pose a less than significant impact. Nonetheless, future residential development would be required to prepare a geological technical report, examining the property's susceptibility for ground failure. The report would be conducted in accordance with the California Building Code and as reinforced in Section 18.01.020 of City Municipal Code. If any of the geologic hazards are determined as posing a potential threat, the report will provide recommendations to reduce the property's susceptibility. These recommendations would be included in the project-specific CEQA environmental report to ensure compliance. As such, all residential projects on the southern parcel will be designed, constructed, and operated in accordance with state and local building codes, development standards, and mitigation measures, as applicable. These provisions would ensure less than significant impacts from ground failure affecting future residential units.

2.8.7 Mitigation Measures

As described above, impacts associated with both the Solar Project and the Residential GPA will be less than significant, and no mitigation measures are required.

2.8.8 Significance After Mitigation

Impacts would remain less than significant.

2.8.9 Cumulative Impacts

According to CEQA, a cumulative impact is based on whether the project's incremental effects, when combined with impacts related to past, present, and reasonably foreseeable future projects in the area could result in a combined significant impact. The Project is not considered to have an incremental effect given that the Solar Project will be built in accordance with the most current state and local building codes and development standards pursuant to City Municipal Code. Similarly, future residential development on the southern parcel will adhere

to the California Building Code and policies, standards, and programs consistent with the City General Plan and Municipal Code. These standards also apply to any new development project in the City, as permitted by the General Plan. Individual projects will be required to implement the City's and State's seismic standards, and to address on-site soils as they are proposed. The uniform application of these standards throughout the City will assure than no significant cumulative geologic or soil impacts will occur.

2.9 Greenhouse Gas Emissions

2.9.1 Introduction

The following section analyzes the greenhouse gas emission impacts associated with build out of the proposed Project, which includes the construction and operation of the proposed E-Group PS Solar Project (Solar Project) and the proposed Residential General Plan Amendment (Residential GPA Project) in Twentynine Palms. Various local and regional data sources, ranging from research and analyses conducted for the entire 477-acre Project site to regional-scale planning and environmental documents, have been used in analyzing the Project and its potential effects on greenhouse gas emissions.

2.9.2 Thresholds of Significance

The project would have a significant effect on greenhouse gases if the Proposed Project were to:

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.

2.9.3 Regulatory Framework

The following section outlines regulatory actions being taken to address climate change and reduce GHG emissions at the international, federal, state, and regional levels.

International

Intergovernmental Panel on Climate Change (IPCC)
The IPCC was founded in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP). The organization is comprised of member governments of the WMO and UN. The mission of the IPCC is to provide scientific research to governments in order to inform climate policies.

United Nation's Framework Convention on Climate Change (UNFCCC)
The UNFCCC was signed by 154 member nations in 1992 and now has 198 members. The Convention guides the global response to climate change with the objective of stabilizing greenhouse gas concentrations at a level that would mitigate the dangerous consequences of climate change. The UNFCCC defines

climate change as: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere, and which is in addition to natural climate variability observed over comparable time periods."[1]

The UNFCCC is the parent treaty of the Kyoto Protocol and Paris Agreement. While the UNFCCC sets targets for GHG concentrations, the 1997 Kyoto Protocol established binding targets for the 192 signatory parties. The Paris Agreement was adopted in 2015 as a legally binding international treaty signed by 196 parties. It aims to limit global warming to less than 2 degrees Celsius above pre-industrial levels by setting nationally determined contributions (NDCs) of increasingly ambitious climate action on 5-year cycles.[2]

Federal

Clean Air Act

The U.S. Supreme Court ruled that carbon dioxide is an air pollutant as defined under the Clean Air Act, and that the EPA has the authority to regulate emissions of GHGs (*Massachusetts v. EPA* (2007) 549 U.S. 497). Pursuant to that ruling, EPA has taken actions seeking to regulate, monitor, and reduce GHG emissions.

GHG Endangerment Finding

Under section 202(a) of the Clean Air Act, the EPA determined that GHGs threaten public health and welfare, and that GHG emissions from motor vehicles contribute to this threat. The two distinct findings, signed by the EPA Administrator in December 2009, found that:

1. The Endangerment Finding: Concentrations of six greenhouse gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in atmosphere constitute air pollution and threaten the health and welfare of the public.
2. The Cause or Contribute Finding: Emissions from new motor vehicles and motor vehicle emissions contribute to GHG concentrations in the atmosphere and thus to climate change.[3]

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1 United Nations Framework Convention on Climate Change, Article 1 Definitions (2), https://unfccc.int/resource/ccsites/zimbab/conven/text/art01.htm, accessed October 2024.

2 United Nations Climate Change, UNFCCC Process, The Paris Agreement https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement, accessed October 2024.

3 United States Environmental Protection Agency, EPA's Endangerment Finding, https://www.epa.gov/sites/default/files/2016-08/documents/endangermentfinding_faqs.pdf, accessed October 2024.

Mandatory Reporting of GHGs (40 CFR Parts 86, 87, 89 et al.)
The Mandatory Reporting of Greenhouses Gases rule requires reporting of greenhouse gas emissions from major fossil fuel suppliers, industrial gas suppliers, direct greenhouse gas emitters and manufacturers of heavy-duty and off-road vehicles and engines. The rule requires facilities that emit 25,000 tons per year (MT/yr) of GHGs or more to submit annual reports to the EPA.[4]

New Source Review (NSR)
The New Source Review Permitting program was established by Congress in 1977 as part of the Clean Air Act Amendments. The program requires new industrial facilities, or facilities making changes that will increase emissions significantly, to obtain permits limiting air emissions prior to construction. Permits are issues by state or local air pollution control agencies, and sometimes the EPA. The program requires that new sources meet the requirements for one or more of the following permits: Prevention of Significant Deterioration (PSD) permits, Nonattainment NSR permits, and minor source permits.

State

Assembly Bill 32 of 2006 (AB 32) and Senate Bill 32 of 2016 (SB 32)
The California Global Warming Solutions Act of 2006 (AB 32) requires California to adopt regulations in order to reduce GHG emissions to 1990 levels by 2020. This represents reductions of approximately 15% below the emissions projected in a "business as usual" scenario. SB 32, The California Global Warming Solutions Act of 2016, is the companion bill to AB 32. This bill furthers the State's emissions limit and requires California to adopt regulations to reduce GHG emissions to 40% of 1990 levels by 2030.

Industry, energy, and transportation sectors are subject to the 2022 Scoping Plan for Achieving Carbon Neutrality. Three previous Scoping Plans defined pathways for achieving greenhouse gas reduction targets within industrial, energy, and transportation sectors, and the 2022 Scoping Plan expands upon the previous plans by setting a target of reducing GHG emissions to 85% below 1990 levels by 2045. One key addition to this most recent 2022 Scoping Plan is the consideration of the carbon capturing and sequestration capability of the State's natural and working lands. The 2022 Scoping Plan also supports zero-emission transportation, displacement of fossil-fuel fired electrical generation through use of renewable energy alternatives, phasing out use of fossil gas use for heating homes and buildings, reducing chemical and refrigerants with high GWP, and providing communities with sustainable options for walking, biking, and public transit.

[4] Federal Register, Part II Environmental Protection Agency (October 30, 2009), accessed October 2024).

Assembly Bill 1279 – California Climate Crisis Act

Signed in 2022, AB 1279 establishes legally binding goals for statewide carbon neutrality by 2045 and net-negative emissions thereafter. Key targets include reducing GHG emissions to at least 85% below 1990 levels by 2045 and requiring the CARB Scoping Plan be updated to align with these goals, emphasizing carbon removal in addition to emissions reductions.

SB 1020 - Clean Energy, Jobs, and Affordability Act of 2022

SB 1020, part of California's Global Warming Solutions Act framework, advances the state's climate goals by mandating a transition to 90–100% renewable and zero-carbon energy for retail electricity sales by 2035–2045, reducing greenhouse gas emissions. SB 1020 mandates that renewable and zero-carbon energy sources provide:

- 90% of retail electricity sales to California customers by December 31, 2035,
- 95% by December 31, 2040,
- 100% by December 31, 2045, and
- 100% of electricity for state agencies by December 31, 2035.

Senate Bill 375 (SB 375)

SB 375 directs CARB to set regional GHG emissions reduction targets. The intent of the bill is to ensure local and regional governments are involved in efforts to meet the reduction targets set forth by AB 32 and SB 32. Alignment between state and local emission reduction efforts is important particularly because regional transportation planning and housing needs allocation, factors that have a major impact on GHG emissions in California, are overseen by local elected officials. The bill encourages an integrated approach by requiring the inclusion of Sustainable Communities Strategies in regional transportation plans, synchronizing the General Plan Housing Elements update schedule to align with regional transportation planning cycles, and adding CEQA incentives for projects that align with regional plans and reduce GHG emissions.

Executive Order (EO) N-79-20 – Zero Emissions by 2035

California Executive Order N-79-20, issued by Governor Gavin Newsom on September 23, 2020, addresses the climate crisis by directing state agencies to phase out new sales of gasoline-powered passenger vehicles (cars and light trucks) by 2035, transitioning to 100% zero-emission vehicles, consistent with the state's goals of carbon neutrality by 2045.

Clean Energy and Pollution Reduction Act of 2015 (SB 350)

SB 350 establishes a state renewable energy procurement goal, increasing from 33% by 2020 to 50% by 2030. The act is implemented by the California Energy Commission in conjunction with state agencies including the Public Utilities Commission and CARB. Large utilities companies are also required to prepare

integrated resource plans (IRPs) establishing how the utilities will meet customer demands while reducing GHG emissions and increasing the use of clean energy sources.

California Renewable Portfolio Standard Program of 2018 (SB 100)

SB 100 increases the renewable energy procurement goals of SB 350 such that the state must achieve 50% of its energy from renewables by 2026, 60% by 2030.

CARB 2022 Scoping Plan Update

The 2022 Scoping Plan provides CARB's update to the 2017 Plan. Pursuant to SB 32, the plan sets forth the state's plan to stay on track towards reducing GHG emission by at least 40% below 1990 levels by 2030. Additionally, the 2022 Plan Update establishes a path for the state to achieve carbon neutrality by 2045 through technologically feasible and cost-effective means.[5]

Title 24 of the California Code of Regulations

The California Building Standards Code covers a broad set of regulations regarding the construction, maintenance, fire safety, and accessibility of buildings, as well as the integration of energy conservation practices and green design.

Adopted in 1978, Part 6 of Title 24 establishes energy efficiency standards for residential and non-residential buildings constructed in the state. With the aim of continuing to reduce energy demand and consumption, Part 6 is updated as needed to reflect new energy efficiency technologies and methodologies.

Part 11 of Title 24 of the CCR The California Green Building Standards Code, or CALGreen, established mandatory minimum environmental performance standards addressing energy and water efficiency, material and water conservation, and environmental quality. CALGreen took effect in January 2022 and applies to all new commercial, low-rise residential, state-owned buildings, schools, and hospitals constructed in California. The 2025 Title 24 Building Energy Efficiency Standards will be effective on January 1, 2026. These standards aim to incorporate new measures to reduce energy use and greenhouse gas emissions. CALGreen was developed to help California meet the emissions reductions targets set forth in AB 32 and SB 32.

[5] California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality, December 2022, accessed February 2025.

CARB Refrigerant Management Program

Administered by the California Air Resources Board, the Refrigerant Management Program requires periodic leak inspections, prompt leak repairs, as well as reporting and maintenance of on-site service records, for all facilities with refrigeration systems containing more than 50 pounds of high-global warming potential (GWP) refrigerant. CARB adopted the program in 2009 as part of AB 32.

Senate Bill 97 (SB 97)

SB 97 recognized the need for state agencies to analyze GHG emissions as part of the California Environmental Quality Act process. The bill updated CEQA to require the Office of Planning and Research (OPR) to develop guidelines for the feasible mitigation of GHG emissions, of the effects of GHG emissions, to be transmitted to the California Air Resources Board for approval. The adopted guidelines apply to effects associated with transportation and energy consumption.

Assembly Bill 1493 – The Pavley Bill

California was the first state to establish regulations that require the reduction of emissions of GHGs from motor vehicles. On September 24, 2004, the California legislature adopted the Pavley Bill that requires all motor vehicles of 2009 vintage or later to reduce their greenhouse gas emissions by about 30% by the year 2016. The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program (LEV III) or the Advanced Clean Cars program. The Advanced Clean Car (ACC) program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs emissions from new cars by 34% from 2016 levels by 2025.

Advanced Clean Cars II (ACC II)

Approved in November 2022, the Advanced Clean Cars II (ACC II) regulations require that all new passenger cars, trucks, and SUVs sold in California are zero emission vehicles by 2035. This regulation establishes a phased approach, with increasing ZEV sales targets starting in 2026 (35% of new vehicle sales) and rising annually until reaching 100% by 2035. ACC II not only accelerates the transition away from internal combustion engines but also aligns with California's broader commitment to achieve carbon neutrality by 2045, reinforcing its leadership in environmental policy.

Local

Air Quality Management Districts

According to §15064.7(b) of the CEQA Guidelines, for a threshold of significance to be adopted for general use as part of a lead agency's environmental review process, it must be adopted by ordinance, resolution, rule, or regulation. While the

Project is located within the MDAQMD jurisdiction, the MDAQMD threshold for greenhouse gas emissions has not been formally adopted by the City. For analysis purposes, Project impacts will be assessed against GHG thresholds from MDAQMD.

The GHG emission significance thresholds for the MDAQMD are discussed below:

Table 2.9-1
MDAQMD CO_{2e} Significance Thresholds

District	Threshold
MDAQMD All Projects	548,000 pounds (daily) 100,000 short tons (annual)

MDAQMD Significance Thresholds

According to the MDAQMD, any project is significant if it triggers or exceeds the most appropriate evaluation criteria. The District will clarify upon request which threshold is most appropriate for a given project; for GHG emissions, the emissions comparison (criteria number 1) is sufficient, while criteria 2-4 are applicable to Air Quality (see Section 2.4 Air Quality):

1. Generates total emissions (direct and indirect) in excess of the MDAQMD thresholds;
2. Generates a violation of any ambient air quality standard when added to the local background;
3. Does not conform with the applicable attainment or maintenance plan(s);
4. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1.[6]

In 2008, SCAQMD developed and recommended GHG thresholds for all non-industrial projects (3,000 $MTCO_2e$), and 10,000 $MTCO_2e$ for industrial projects over which it had jurisdiction. SCAQMD's GHG Working Group consensus "clearly states that it is at the lead agency's discretion to apply the appropriate threshold to the project for CEQA review. In other words, SCAQMD's recommendation is that the lead agency will need to decide which threshold is most appropriate." These SCAQMD thresholds were developed using substantial evidence by the SCAQMD GHG Working Group—a group of various resource agencies, cities, counties, utilities, and environmental groups—with the objective of capturing 90 percent of

[6] MDAQMD, California Environmental Quality Act (CEQA) and Federal Conformity Guidelines, February 2020, https://www.mdaqmd.ca.gov/home/showpublisheddocument/8510/638591628485530000, accessed October 2024.

GHG emissions from larger projects above the screening threshold and allowing smaller projects to be implemented without further mitigation. The long-term goal of the State regulations described above to reduce statewide GHG emissions to 80 percent below 1990 levels by 2050 formulated the basis of the SCAQMD recommendation, which is also consistent with analysis published by the California Air Pollution Control Officer's Association in its 2008 White Paper on CEQA and Climate Change. The SCAQMD quantitative thresholds for GHG emissions are more conservative than the threshold currently in use by MDAQMD. Therefore, in order ensure that analysis of the Project's impacts related to GHG is conservative under CEQA, emissions were evaluated against both the MDAQMD and SCAQMD thresholds below.

San Bernardino County Regional Greenhouse Gas Reduction Plan Update (2021)
The 2021 San Bernardino County Regional Greenhouse Gas Reduction Plan (2021 Plan Update) identifies state GHG reduction measures applicable to participating jurisdictions, as well as local measures selected by each jurisdiction that could reduce future GHG emissions within jurisdictional boundaries. The reduction plan has individual sections for each jurisdiction that detail the jurisdiction's 2016 GHG emissions inventory, 2030 GHG emissions forecast, reduction goal, jurisdiction-selected (or consultant-identified) GHG reduction measures, and related General Plan policies or other ongoing programs in the jurisdiction. The purpose of the plan is to provide participating jurisdictions with relevant information to complete and adopt their own Climate Action Plan (CAP). The City of Twentynine Palms does not currently have a Climate Action Plan and therefore the County's 2021 Plan Update is the appropriate tool for analysis of GHG impacts.

To meet the State's goal of carbon neutrality by 2045, the County must reach an emissions reduction target of 40% below 2020 levels by 2030. While continued reductions beyond 2030 will be necessary, the 2030 target would put the County on track to meet the State's 2045 goal.[7]

City of Twentynine Palms General Plan 2012
Climate change goals of policies that govern new development and redevelopment throughout the City are prescribed in the City's 2012 General Plan.

Goal LU-7 Protect and preserve Twentynine Palms natural resources, promote the existing quality of life and prepare for future residents and businesses by promoting superior sustainable development.

[7] San Bernardino County Greenhouse Gas Reduction Plan Update, June 2021, accessed January 2025.

Policy LU-7.2 Development shall be sustainable in its use of land and shall limit impacts to natural resources, energy, and air and water quality.

Policy LU.7.8 Encourage sustainable building practices that go beyond the requirements of Title 24 of the California Administrative Code through energy-efficient design.

Goal CO-4 Develop regulations and policies which reduce pollutants responsible for lowering the air quality within the City and for adding to the global climate change problem.

Policy CO-4.12 Cooperate with SCAG and SANBAG to develop a local climate action plan.

Policy CO-4.13 Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas reducing measures that are technologically feasible and cost effective, for both public and private development projects.

Policy CO-4.17 Work with local energy providers on voluntary incentive-based programs to encourage developers to use energy efficient designs and equipment beyond the requirements of Title 24. Encourage development to utilize CEC's voluntary Tier II Energy Efficiency standards in effect at the time building construction begins in combined with space heating, cooling and water heating energy.

Goal CO-7 Develop regulations and programs to encourage sustainable practices in land use, use of buildings and for development and construction.

Policy CO-7.1 Use the City's building codes and development code to encourage sustainable construction practices and the use of energy-saving technology within buildings.

Policy CO-7.2 Develop regulations requiring the separation of various types of waste being disposed and require as much of that waste as possible to be recycled.

Policy CO-7.4 Develop provisions within the development and building codes to encourage and allow alternative energy facilities and equipment to be installed and developed on individual properties to serve that property.

2.9.4 Environmental Setting

"Greenhouse gas" is a broad term referring to chemicals and substances found to cause changes in the atmosphere and the changing of the earth's climate. While these are not the only greenhouse gases, the California Air Resources Board is required to monitor and regulate seven GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), nitrogen trifluoride (NF_3), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs).[8] The latter four gases, all of which contain fluorine, are sometimes collectively referred to as high global warming potential greenhouse gases (high-GWP gases).

Table 2.9-2
Sources of GHGs from Human Activities

GHG & % of State's Emissions[1]	Description and Sources[2]	Global Warming Potential	Atmospheric Lifetime Potential
Carbon Dioxide (CO_2) 81%	Odorless and colorless gas that is naturally emitted by the decomposition of dead organic matter, oceans, and volcanoes, as well as the respiration of plants, animals and fungus. Next to water vapor, carbon dioxide is the most abundant GHG. Human activities emit CO_2 when burning fossil fuels and burning and removing forests and other vegetation. Looking back 800,000 years prior to the Industrial Revolution, the level of CO_2 in the atmosphere never climbed above 300 parts per million. Today we measure CO_2 at 419.81 parts per million.	1	1,000s of years
Methane (CH_4) 9.8%[3]	A natural byproduct of biological processes in low oxygen environments such as bogs or at the roots of rice crops, as well as in cattle raising. Methane is the third most abundant GHG in the atmosphere. It is released during the extraction, refining, and burning of fossil fuels, and the burning and clearing of native vegetation. Raising of livestock, decay of organic waste, and landfills also emit methane.	25	About 10 years

[8] California Health and Safety Code § 38505 (g).

Table 2.9-2
Sources of GHGs from Human Activities

GHG & % of State's Emissions[1]	Description and Sources[2]	Global Warming Potential	Atmospheric Lifetime Potential
Nitrous Oxide (N_2O) 3.5%[3]	Like carbon dioxide and methane, nitrous oxide naturally occurs in the atmosphere. It is also released by agricultural activities and agricultural chemicals, fossil fuel combustion, wastewater treatment and industrial processes.	298	More than 100 years
Fluorinated Greenhouse Gases 5.8%[3]	Perfluorocarbons (PFCs): Synthetic gases stable molecular structures and very long lifetimes in the atmosphere. Chlorofluorocarbons (CFCs), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF_6) Together these 30 different gases are referred to as fluorinated GHGs. F-GHGs are solely emitted as by-products of industrial processes such as aluminum and semi-conductor manufacturing and used as refrigerants and aerosol propellants. Hydrofluorocarbons (HFCs): Synthetic gases that have the highest GWP of all GHGs, though they represent a small proportion of emissions.	Between 140 and 14,800 depending on the gas	Between 8 and 50,000 years depending on the gas
	Sulfur Hexafluoride (SF_6): A synthetic, odorless, colorless, nontoxic and nonflammable gas. SF_6 is emitted by electricity transmission and distribution and by semiconductor manufacturing.	23,500	3,200
	Nitrogen trifluoride (NF_3): A synthetic, colorless, toxic gas with a musty odor. NF_3 is emitted by semiconductor manufacturing.	16,100	740 years

[1] Source: California Air Resources Board, Greenhouse Gas Inventory for 2000-2022.
[2] Sources: California Air Resources Board 2022 Scoping Plan Update, Environmental and Regulatory Setting; U.S. EPA, Overview of Greenhouse Gases, https://www.epa.gov/ghgemissions/overview-greenhouse-gases, (Accessed October 2025).
[3] In carbon dioxide equivalent units.

According to the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6), atmospheric concentrations of CO_2 have increased by 50 percent since the industrial revolution and continue to increase at a rate of two parts per million each year. At this rate, the world will exceed 1.5°C above pre-industrial levels by the 2030s.[9] This level of global warming is associated with global mean sea level rise as well as regional climatic changes such as extreme temperatures, increases in the frequency and intensity of storm events and heavy precipitation in some regions, and increases in the intensity and frequency of droughts in other regions.[10]

The California Energy Commission published a report on the impacts of climate change on the region encompassed by the Mojave and Sonoran Deserts.[11] It found that the region's already extreme heat will increase by up to 8 to 14 degrees Fahrenheit by the end of the century, and that low and highly variable rainfall rates will be even more variable over coming decades. Increasingly extreme weather conditions will increase both the risk of flash flooding and wildfire. High temperatures and changing water supplies will exacerbate existing public health challenges and threaten vital industries such as agriculture and tourism.

In 2022, emissions from GHG emitting activities in California were 371.1 $MMTCO_2e$, 9.3 $MMTCO_2e$ below 2021 levels and 59.9 $MMTCO_2e$ below the 2020 GHG Limit. According to the CARB 2000-2023 GHG Inventory (2025 Edition), total California greenhouse gas emissions for 2023 were 360.4 $MMTCO_2e$.[12] Carbon dioxide is the primary greenhouse gas emitted in California. Transportation, particularly on-road travel, is the predominant source of carbon dioxide emissions in California, and as shown in Figure 2.9-1, accounted for 38% of $MMTCO_2e$ in the state in 2023.[13]

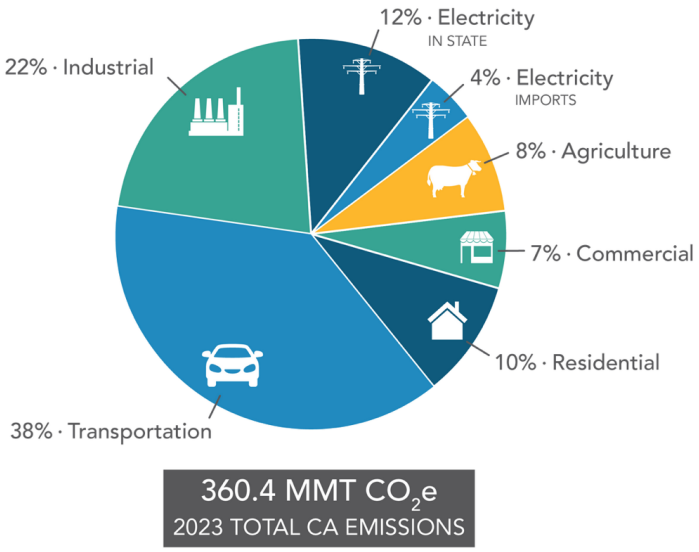
9 IPCC Climate Change 2021: The Physical Science Basis. Contribution of Working Group 1 to the Sixth Assessment Report of the IPCC, 2021, https://www.ipcc.ch/report/ar6/wg1/, accessed October 2025.

10 IPCC Special Report: Global Warming of 1.5°C – Summary for Policymakers, 2018, accessed October 2025.

11 California Energy Commission, California's Fourth Climate Change Assessment, 2018, Inland Deserts Region Report, accessed October 2025.

12 CARB Greenhouse Gas Inventory for 2000-2022, 2024 Edition, https://ww2.arb.ca.gov/ghg-inventory-data, accessed October 2025.

13 California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality, December 2022, accessed October 2025.



California by Sector
Source: CARB Greenhouse Gas Inventory for 2000-2023, 2025 Edition.

Carbon dioxide equivalents (CO_2e), and specifically metric tons of carbon dioxide equivalents ($MTCO_2e$), are units of measure used to compare emissions of various greenhouse gases. Carbon equivalent refers to the mass of carbon dioxide that would produce the same estimated radiative force as that of another greenhouse gas.[14] These metrics facilitate the development of multi-gas frameworks and policies which are crucial to action addressing climate change.

2.9.5 Existing Conditions

The 2021 San Bernardino County Regional Greenhouse Gas Reduction Plan (Reduction Plan) provides information regarding the City's progress toward GHG reduction targets. According to this document, Twentynine Palms set a goal to reduce its GHG emissions to 46% below its 2008 emissions level by 2030 and is expected to exceed this goal through both local and state efforts. In 2016, total annual GHG emissions for the City were 125,545 $MTCO_2e$. To achieve the goal, Twentynine Palms needed to reduce GHG emissions by 79,123 $MTCO_2e$ over the following 14 years.

State reductions comprise about 91% of the City's reduction efforts through mandated advances in transportation and building efficiency, and methane capture from landfill sites. Local GHG reduction measures include the implementation of alternative fuels for the City's community fleet, solar installation for existing commercial and housing land uses, converting buildings to all electric buildings, continuing to increase building energy efficiency, and increase indoor and outdoor water efficiency. By 2030, the City should exceed the goal by 249 $MTCO_2e$. The largest reductions are expected to come from reduction in energy use by buildings through increased efficiency and renewable energy production as well as increased efficiency in on-road transportation and reduction in solid waste.[15]

[14] CARB Greenhouse Gas Inventory for 2000-2022, 2024 Edition, https://ww2.arb.ca.gov/ghg-inventory-data, accessed October 2025.
[15] San Bernardino County Greenhouse Gas Reduction Plan Update, City of Twentynine Palms Reduction Profile, June 2021, accessed October 2025.

2.9.6 Project Impacts

Forecast modeling of construction and operational emissions resulting from the Project were calculated using the California Emissions Estimator Model (CalEEMod) Version 2022.1, a computer program used in quantifying emissions associated with land development projects in California. The model calculates criteria pollutant emissions, including CO, PM_{10}, $PM_{2.5}$ and the ozone precursors ROG and NO_x, in addition to greenhouse gas equivalent emissions. Full CalEEMod reports for the Project are provided in the Air Quality and Greenhouse Gas Report (Appendix C).

The Project is comprised of an installation of a photovoltaic electric generating facility (Solar Project) and a Residential General Plan Amendment (Residential GPA) on two parcels of vacant land totaling 477 acres. The Project is located in the northwest section of Twentynine Palms, north of Two Mile Road, east of Sunrise Road and bisected by Samarkand Drive.

Solar Project

The 50-megawatt (MW) Solar Project is proposed for 241 acres on the north side of Samarkand Drive. The City would need to redesignate the land use and zoning on this acreage from residential to a new Energy (E) land use. Actual construction time for the Solar Project would be six months, although, with potential delays in acquiring materials, the timeframe may extend to nine months. The Solar Project would disturb 142.2 acres (ac) of land, which includes 131.6 ac for the solar arrays, 9 ac for the off-site access road between Two Mile Road and the Solar Project site and 1.6 ac of disturbance along Two Mile Road for the utility extension line. Bridges over natural drainage gullies would be constructed to avoid grading the gullies and leave 98 acres ungraded. Preliminary grading plans indicate that cut and fill materials would balance on site. The Solar Project will require the import of 15,400 cubic yards CY of gravel for the off-site and on-site access roads, and 560 CY of concrete for the transformer pad, and footings for the racks and steel bridges. Once operational, the Solar Project would only generate emissions from maintenance vehicles visiting the site up to three times per year.

Residential GPA

The Residential GPA is proposed for 60 acres of the 236 acres south of Samarkand and north of Two Mile Road. The proposed GPA would be redesignated 60 acres of land designated Rural Living (RL-5) to Single-Family Residential (RS-1), which would increase the dwelling unit density on those 60 acres from a maximum buildout potential of 12 units to 60 units, a net increase of 48 units. Although the

proposed GPA would redistribute residential density by concentrating it on the southern half of the site rather than the northern half (Solar Project site), the overall Project would maintain the site's existing development capacity of 119 residences and would not introduce any new GHG emission impacts beyond those already evaluated in the City's 2012 General Plan.

While the proposed Project does not include construction of single-family homes on this portion of the Project site, GHG emissions from build out of the 119 residences is provided for informational purposes. Greenhouse gas emissions were modeled based on generalized residential construction estimates for the purpose of providing an approximate understanding of potential emissions. When residential structures are proposed for this site in the future, a new CEQA analysis with project-based data will be required. For modeling purposes, the build out timeframe for the residential site is five years, with buildout occurring in 2032.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Solar Project Impacts

Construction activities will result in short-term GHG emissions associated with the use of construction equipment, vehicle emissions from construction employee commutes, materials hauling, and ground disturbing activities. Table 2.9-3 shows that the Project is forecasted to generate a total of 647 $MTCO_2e$ during the 6-month construction period and generate annual operational emissions of 0.19 $MTCO_2e$.

Development of the proposed Solar Project reduces demand on the electrical grid by generating renewable energy onsite, thereby off-setting electricity typically sourced from the electric grid power mix. The California Energy Commission reported in 2021 that the state's non-CO_2 emitting electric generation categories (nuclear, large hydroelectric, and renewables) accounted for 49 percent of its in-state generation, approximately 40.9 percent from CO_2 emitting fossil fuels, primarily natural gas, with coal nearly phased out, and the remainder from carbon-neutral sources.[16] By supplying clean power directly to the grid, the Solar Project decreases reliance on SCE's fossil fuel-based generation, reducing GHG emissions proportional to the renewable energy produced.

16 California Energy Commission. (2022). 2021 Total System Electric Generation. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation.

A separate CalEEMod analysis was conducted to estimate the GHG emissions avoided by the annual kWh reduction achieved through the operation of the proposed Solar Project. To calculate the maximum annual kWh potential of a 50 MW solar array, the power capacity is first converted from megawatts (MW) to kilowatts (kW), yielding 50,000 kW. The maximum energy output in kWh is then determined by multiplying this capacity by the total number of peak sun hours in a year. Assuming an average of 6.5 peak sun hours per day in California[17], the daily output is 325,000 kWh (50,000 kW × 6.5 h). Over a 365-day year, this results in an annual maximum potential of 118,625,000 kWh (325,000 kWh/day × 365 days). This calculation represents the theoretical maximum under optimal conditions, excluding variables such as efficiency losses, seasonal variations, or region-specific environmental factors. The National Renewable Energy Laboratory's (NREL) PVWatts Calculator[18] was used to more accurately calculate the Project's solar system output, which estimated the Project could offset an average of 93,050,290 kWh per year. The PVWatts Calculator accounts for system losses[19] and assumes a default system loss of 14.08 percent.

Per the Air Quality and GHG Report (Appendix C), 93,050,290 kWh sourced from the SCE grid would result in approximately 14,697 metric tons of CO_2e ($MTCO_2e$) emissions annually, meaning the Solar Project would achieve a proportional annual reduction of 14,697 $MTCO_2e$.

It should be noted that studies conducted by the NREL which analyze productivity degradation of photovoltaic systems over time found that on average, large energy facilities lose 0.75% of their production capacity per year.[20] Exposure to environmental elements degrades equipment and leads to slight losses in energy production. Productivity loss is greater in warmer climates than in cooler climates. After the first year, the amount of electricity generated by the Solar Project and proportional GHG emission reductions could decline by 0.75% annually.

17 Kielar, H. (2023, March 30). *Guide To Peak Sun Hours*. GreenLancer. https://www.greenlancer.com/post/peak-sun-hours

18 *PVWatts Calculator*. Pvwatts.nrel.gov. https://pvwatts.nrel.gov/.

19 System losses account for performance losses you would expect in a real system. The default values (percentage) for the system loss categories used in the PVWatts Calculator are as follows: soiling (2), shading (3), mismatch (2), wiring (2), connections (0.5), light-induced degradation (1.5), nameplate rating (1) and availability (3).

20 National Renewable Energy Laboratory, *How Extreme Weather and System Aging Affect the US Photovoltaic Fleet*, January 24, 2024, https://www.nrel.gov/news/program/2024/how-extreme-weather-and-system-aging-affect-the-us-photovoltaic-fleet.html#:~:text=In%202022%2C%20in%20their%20first,End%20of%20interactive%20chart, accessed February 2025.

The following numbers represent the Solar Project's production capacity assuming a 0.75% annual decline over 30 years,[21] and assuming no efficiency upgrades or panel replacements:

Year 1: 93,050,290 kWh saved
Year 10: 86,311,953 kWh saved
Year 20: 80,058,088 kWh saved
Year 30: 74,258,243 kWh saved

The cumulative impacts of the Project's construction and operational emissions, and annual emission reductions are provided in Table 2.9-3.

Residential GPA + Solar Project Impacts

Although the Project includes the GPA, no residential development is proposed at this time. Although the proposed GPA would redistribute residential density by concentrating it on the southern half of the site rather than the northern half, the overall Project would maintain the site's existing development capacity of 119 residences and would not introduce any new GHG-related impacts beyond those already evaluated in the City's 2012 General Plan.

Direct GHG emissions come from activities controlled by a project, such as on-site construction equipment and operational vehicle use, which directly release emissions from fuel combustion or other processes on-site. Indirect GHG emissions stem from off-site activities linked to a project's operations, like energy use (e.g., electricity or heating), solid waste disposal (e.g., methane from landfills), and water use (e.g., energy for pumping and treatment).

According to the MDAQMD CEQA Guidelines, a project's impact is considered significant if it generates total emissions (direct or indirect) that exceed the applicable threshold. Currently MDAQMD does not provide construction-related GHG emissions thresholds for projects. As such, construction-related GHG emissions are amortized over a 30-year period, added to the annual operational emissions then compared to the MDAQMD operational-related threshold in order to determine if construction emissions will result in a cumulatively considerable impact. Total construction emissions for the Solar Project would equal 647 $MTCO_2e$. As shown in Table 2.9-3, amortized over 30 years, construction emissions for the Solar Project would be 21.6 $MTCO_2e$ annually for the solar site. Buildout of the residential acreage would equal 1,628 $MTCO_2e$, which would not be an increase in emissions, since the units are being relocated from the Solar Project site, and no increase in General Plan build out residential units is proposed. Construction emissions would be 54.3 $MTCO_2e$ annually for the residential site.

[21] Calculation: kWh saved = 93,050,290 x $(1\text{-rate})^{years}$

As shown in Table 2.9-3, the annual CO_2e emissions from the construction and operation of the Solar Project and the Solar Project's CO_2e emissions reduction would result in a net reduction of 14,675.25 $MTCO_2e$ per year and would not exceed the MDAQMD significance threshold of 100,000 short tons of CO_2e (90,718 $MTCO_2e$) per year. Buildout of the Residential GPA, as shown in Table 2.9-4 would similarly not exceed the MDAQMD significance threshold. Furthermore, neither the Solar Project nor the Residential GPA exceed the more stringent SCAQMD thresholds of 10,000 $MTCO_2e$ or 3,000 $MTCO_2e$ per year, respectively. Finally, the emissions reductions of the Solar Project would offset the emissions generated by the residential units on the site which are consistent with General Plan build out, and still result in a total reduction in GHG emissions of 12,861.67 metric tons per year, as shown in Table 2.9-4.

Under CEQA, the Project's direct greenhouse gas emissions are deemed less than significant. When considering the Project as a whole, it achieves an overall reduction in greenhouse gas emissions.

Table 2.9-3
Solar Project GHG Unmitigated Emissions Summary
(Metric Tons)

Solar Project	CO_2e (MT/YR)
Operational Annual	0.15
Solar Construction: 30-Year Amortized[1]	21.6
Solar GHG Savings	-14,697
Solar Project Annual Total: Construction 30-Year Amortized[1] + Operational+ Solar GHG Savings	-14,675.25
MDAQMD Annual Threshold	90,718[2]

1. Buildout Construction GHG emissions are amortized over 30 years:
   - Solar Field Total: 647$MTCO_2e$ / 30 = 21.6
2. The MDAQMD threshold of 100,000 short tons is converted to 90,718 metric tons.

Table 2.9-4
Residential GPA GHG Unmitigated Emissions Summary
(Metric Tons)

Residential	CO_2e (MT/YR)
Area	102
Energy	341
Mobile	1,241
Waste	35.9
Water	39.1
Refrigerants	0.28
Residential Operational Subtotal	1,759.28

Table 2.9-4
Residential GPA GHG Unmitigated Emissions Summary (Metric Tons)

Residential	CO_2e (MT/YR)
Residential Construction: 30-Year Amortized[1]	54.3
Total Residential Annual Emissions	1,813.58
Total Project Annual Operational Emissions	**-12,861.67**
MDAQMD Annual Threshold	90,718[2]

2. Buildout Construction GHG emissions are amortized over 30 years:
   - Solar Field Total: 647$MTCO_2e$ / 30 = 21.6
   - Residential Total 1,628 $MTCO_2e$ / 30 = 54.3
3. The MDAQMD threshold of 100,000 short tons is converted to 90,718 metric tons.

Carbon Sequestration by Native Plants

The CARB 2022 Scoping Plan for Achieving Carbon Neutrality includes analyses on the carbon capture and storage potential of California's forests, grasslands, shrublands, and wetlands. According to a 2018 ecosystem inventory, the State's forests and shrublands contain 5,340 MMT of carbon stock stored in above-ground vegetation, below-ground root systems, and in the soil. This is equal to 19,600 MMT of atmospheric CO_2.[22]

Carbon sequestration is the process of capturing CO_2 from the atmosphere and storing it in stable, long-term reservoirs like soil or biomass, reducing atmospheric CO_2e by removing it from the active carbon cycle. This stored carbon can accumulate in soil and in above- and below-ground biomass. Soil carbon accumulation occurs when organic matter, such as decomposing plant residue, is stored the soil and stabilized, thus sequestering carbon from the atmosphere over time. Above-ground biomass carbon accumulation occurs through vegetation, such as scattered shrubs or trees, while below-ground accumulation involves carbon stored in root systems. Converting native vegetation to other uses disrupts both carbon sequestration and accumulation, diminishing the land's ability to capture and store carbon and potentially turning carbon sinks into CO_2e emission sources or carbon-neutral areas. Specifically concerning the Solar Project, it would diminish carbon sequestration and accumulation on the Project site through grading the Solar Project site, which would result in the removal of native vegetation within the graded areas. The implementation of Mitigation Measure AES-1, which requires the replanting of the site with native vegetation once construction of the Solar Project is complete will allow for some of the carbon sequestration to recur, but to a limited level since the solar panels will reduce the planted area.

22 California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality, December 2022, accessed February 2025.

Assessing the long-term CO_2e emission impacts of removing existing vegetation prior to replanting is challenging due to the complex, variable, and site-specific factors that govern carbon sequestration and accumulation. In deserts, vegetation cover typically consists of sparse and unevenly distributed shrubs that fluctuate with seasonal rainfall, drought, or disturbances like off-roading, complicating reliable estimates without extensive, long-term monitoring. A desert's low vegetation productivity, due to limited water and nutrients, leads to inherently lower sequestration rates that shift with minor environmental changes. Moreover, the absence of precise, site-specific data on soil properties, such as type and organic content, and vegetation characteristics, like shrub density and root biomass, makes it challenging to accurately quantify pre-development carbon accumulation levels. These uncertainties, combined with the dynamic nature of desert ecosystems, make it impractical to confidently predict the carbon storage losses resulting from the Project's development.

It should be noted that the proposed Project will preserve or restore some of the site's natural vegetation, as the Solar Project will re-naturalize land not covered by solar panel racks and roadways, and low-density land use designations avoid fully converting the native landscape into urban areas. Therefore, the project site would retain much of its existing carbon sequestration capacity with implementation of the Project.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Solar and Residential GPA

The California Air Resources Board (CARB) 2022 Scoping Plan puts forward the target of achieving carbon neutrality in state-wide emissions by 2045 or earlier. This plan builds on the efforts of the three previous scoping plans, which established goals to meet 1990 levels by 2020 and 40 percent below 1990 levels by 2030, in compliance with Senate Bill 32 (SB 32). The 2022 Scoping Plan Update aims to further reduce anthropogenic emissions in California to 85 percent below 1990 levels by 2045.[23] Additionally, the 2021 San Bernardino County Regional Greenhouse Gas Reduction Plan outlines jurisdictional reduction targets and reviews progress in achieving the targets. The City of Twentynine Palms is on track to meet and exceed its 2030 GHG reduction of 46% below 2008 emissions even with projected population growth. The development of renewable energy facilities, including solar facilities, is supported by the CARB 2022 Scoping Plan. As stated in the Scoping Plan, "The major element of this unprecedented

[23] California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality, December 2022, accessed February 2025.

transformation is the aggressive reduction of fossil fuels wherever they are currently used in California . . . It means continuing to build out the solar arrays, wind turbine capacity, and other resources that provide clean, renewable energy to displace fossil-fuel fired electrical generation."

The Solar Project would ultimately reduce regional grid demand for electricity by 93,050,290 kWh annually, resulting in a GHG reduction of 14,675 $MTCO_2e$ annually, resulting in a net positive impact on the environment with regard to GHG emissions.

Development of the residential units would not result in any increase in GHG emissions as compared to the development permissible under the City's existing zoning and General Plan. Future residential development is subject to local, regional, and statewide building codes including California Building Standards Code, Title 24, Part 11 (CALGreen) which is aimed at increasing energy efficiency of buildings. For future residential, compliance with California's Title 24 Building Energy Efficiency Standards (Part 6) would enhance efficiency and reduce GHG emissions through measures such as mandatory rooftop solar photovoltaic systems (per the 2022 Solar Mandate), high-efficiency HVAC systems, advanced insulation, and low-energy lighting.

In conclusion, the Project aligns with applicable plans, policies, and regulations designed to reduce greenhouse gas (GHG) emissions. Moreover, the Project is expected to achieve a net reduction in GHG emissions, thereby contributing to state and local GHG reduction goals. As a result, its impacts are anticipated to be less than significant.

2.9.7 Mitigation Measures

There are no required mitigation measures. However, as noted above, incorporation of Mitigation Measure AES-1 will reduce impacts associated with the reduction in carbon sequestration and accumulation provided by native plants on the Project site.

2.9.8 Significance After Mitigation

Impacts were found to be less than significant; no mitigation is required.

2.9.9 Cumulative Impacts

Due to their dispersing nature and aggregate regional impacts, greenhouse gases are analyzed in terms of their cumulative impacts. The above analysis considers the potential cumulative impacts of the overall Project on greenhouse

gas emissions in the Mojave Desert Air Basin using significance criteria from the MDAQMD. The analysis also considers emissions in relation to local and state greenhouse gas reduction plans and targets.

Although the proposed GPA would redistribute residential density by concentrating it on the southern half of the site rather than the northern half, the overall Project would maintain the site's existing development capacity of 119 residences and would not introduce any new GHG-related impacts beyond those already evaluated in the City's 2012 General Plan. Buildout of the Solar Project would achieve a net reduction in GHG emissions by generating onsite solar energy in sufficient amounts to fully offset all direct and indirect emissions associated with the site's buildout, including those from electricity consumption, stationary equipment, and mobile emissions. Consequently, the Project would result in a cumulatively beneficial impact on GHG emissions.

2.10 Hazards and Hazardous Materials

2.10.1 Introduction

This section of the EIR describes the potential for the Solar Project, off-site area, and Residential GPA area to create hazards to the public or residents of the area through the transport, use, or disposal of hazardous material. The analysis is primarily supported by the Project-specific Phase I Environmental Site Assessment Report prepared by RSB Environmental on July 28, 2020. The report is appended to this EIR as Appendix G. In addition, data collected from the U.S. Environmental Protection Agency and California Department of Toxic Substance Control databases were utilized for analysis purposes.

2.10.2 Thresholds of Significance

The following thresholds or criteria are derived from Appendix G of the CEQA Guidelines and are used to determine if and to what extent a project may have a potentially significant impact with regard to hazards and hazardous materials. The Project would have a significant effect on or risk exposure to hazards or hazardous materials if it were to:

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 Section 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 to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The Initial Study/Notice of Preparation determined that the Project would result in "No Impact" for threshold questions c), d), e), f) and g). Please see Appendix A. Therefore, they are not analyzed further in this EIR.

2.10.3 Regulatory Framework

Federal

Hazardous Materials Transportation Act (HMR) (49 USC 5101 et seq.)
Enacted in 1975 and managed by the U.S. Department of Transportation. The Act is the basic statute guarding the public, property, and the environment from the inherent risk of transporting hazardous material in intrastate, interstate, and foreign commerce. The Secretary of Transportation identifies a substance or material as hazardous if it is determined "capable of posing an unreasonable risk to health, safety, and property when transported in commerce" (49 USC Section 105.5) and if listed as hazardous under 49 USC 5103.

In addition, the Secretary of Transportation issues regulations for safe transportation, including security of hazardous material. These regulations are applied to any entity or individual who meets one or more of the following criteria:

- Transport hazardous materials in commerce;
- Offer hazardous materials for interstate, foreign, and intrastate transportation in commerce;
- Design, manufacture, fabricate, inspect, mark, maintain, recondition, repair, or test a package, container, or packaging component that is represented, marked, certified, or sold as qualified for use in transporting hazardous material in commerce;
- Prepare or accept hazardous materials for transportation in commerce;
- Are responsible for the safety of transporting hazardous materials in commerce;
- Certify compliance with any requirements under federal law;
- Misrepresents whether he or she is engaged in any activity listed above.

Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.)
Passed in 1976, the Act enables the Environmental Protection Agency (EPA) to control hazardous material in all facets including generation, transportation, treatment, storage, and disposal. The RCRA also sets a framework for the management of non-hazardous soil wastes.

In 1984 the Act was amended to include the Federal Hazardous and Solid Waste Amendments (HSWA). The HSWA expands the scope of jurisdictional power of the EPA, as well as imposing more stringent hazardous water management standards, and a comprehensive underground storage tank program.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 USC 9601 et seq.)
Passed in 1980 and managed by the EPA, CERCLA establishes the Federal "Superfund" to provide cleanup services for uncontrollable and abandoned hazardous waste sites and accidents, spills, or other emergencies associated with pollutants and contaminants released into the environment. By law, the EPA is granted authority to investigate and legally prosecute the parties responsible for the release of contaminants and ensure their cooperation in the cleanup.

The Superfund Amendments and Reauthorization Act (SARA) enacted in 1986 reauthorized CERLA to continue cleanup activities throughout the U.S. and renewed the EPA's authority to oversee cleanup procedures and ensure parties involved are held accountable.

State

California Occupational Safety and Health Act (Cal/OSHA)
Established in 1973 and enforced by the Department of Industrial Relations (DIR). The Act aims to protect workers from the harmful exposure of toxic and hazardous material while at work. The Cal/OSHA utilizes the DIR by granting the agency the authority to create and implement safety and health standards which adequately address concerns including the following:

- Toxic chemical handling and exposure
- Agriculture
- Repetitive motion injuries
- Child labor
- Heat exposure
- Noise exposure
- Aerosol transmissible disease
- Petroleum drilling and production
- Petroleum refining, transport, and handling
- Workplace violence prevention in health care

The Cal/OSHA prohibits the use of material or services that signal an imminent hazard. Permits, certifications, and licenses are issued by the DIR for major activities in construction projects proposing the use of diesel engines in mining and tunneling.

California Health and Safety Code (CHSC)

The Hazardous Water Control Law, codified in CHSC Division 20, Chapter 6.5, establishes that all facilities that manage the disposal, storage, transfers, and treatment of hazardous waste must file for a hazardous waste facility permit. The permit is issued by the California Department of Toxic Substances Control (DTSC) on the basis of a five-tiered system. The system matches the facility with the appropriate regulatory oversight category in relation to the risk the facility poses.

Additionally, the Hazardous Waste of Concern and Public Safety Act under CHSC Article 6.6, defines hazardous waste of concern (HWC) as consisting of a waste product composed of explosive material or poisonous gas. The Act requires all facilities handling HWC to submit a Disclosed Statement with fingerprints for review by the DTSC. In addition, the facility is required to immediately report missing HWC due to the material's potential of being intentionally used to harm the public. Overall, the purpose of the Act is to protect the wellbeing of the public by ensuring the safe handling of hazardous material that poses a health and environmental risk.

Cortese List (California Government Code Section 65962.5)

The Cortese Lists, also known as the Hazardous Waste and Substance Sites List, provides information about the location of hazardous material release sites. Under the State's statute, the California Environmental Protection Agency (CEPA) along with the DTSC are the two agencies responsible for compiling and updating the list annually. The list must include the following:

- All hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the CHSC;
- All land designated as hazardous waste property or border zone property pursuant to former Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the CHSC;
- All information received by the DTSC pursuant to Section 25242 of the CHSC on hazardous waste disposal on public land;
- All sites listed pursuant to Section 25356 of the CHSC.

The purpose of the list is to identify hazardous sites that are currently or have previously been a source of health and environmental harm and make the information accessible to the state, local agencies, and developers as per the requirements of CEQA.

License to Transport Hazardous Materials (California Vehicle Code, Section 32000.5 et seq.)

The California Vehicle Code (CVC) Section 32000.5 requires a person who transports hazardous material to obtain a Hazardous Materials Transportation License (HMTL) if they carry a shipment that mandates the display of hazard warning placard(s) or a shipment that exceeds 500 pounds. In addition, the Code prohibits the issuing of a license if the carrying vehicle does not comply with Section 34501.12 or if it is rated unsatisfactory.

State Water Resources Control Board and Regional Water Quality Control Boards

The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCB) have the authority to protect surface water rights and control the State's water quality under the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

The Porter-Cologne Act of 1969 establishes that the State has the responsibility to manage and control the use of water and water quality. Each RWQCB is responsible for the development and adoption of a water quality control plan (Basin Plan) that best reflects the focus and goals of the region. All nine regional water boards must implement a Basin Plan and review and update the plan at least every three years.

Both Water Board agencies are responsible for issuing and enforcing permits. The SWRCB issues general statewide permits, whereas the RWQCB issues individual permits specific to a facility. If a permit is granted by the appropriate Water Board, the facility has to adhere to the permit's regulations, which include limits on the type of waste discharged, monitoring and reporting requirements, and other provisions that ensure the discharge is not harming water quality.

The Water Boards translate general requirements of the Clean Water Act into specific provisions while remaining within regional water quality goals to manage water pollution and safeguard the health, safety, and welfare of the public.

California Department of Forestry and Fire Protection (Cal Fire) Forest Practice Act

Passed in 1947, the Forest Practice Act expands the Cal Fire regulatory power to include drafting and enforcing of forest policies for the state. All state adopted forestry and fire protection policies are in Title 14, Division 1.5 of the California Code of Regulation (CCR). The State Fire Marshal (SMF) under Cal Fire regulates buildings intended for human occupancy, controls substances which may cause destruction by fire, provides statewide fire prevention, regulates hazardous liquid pipelines, reviews building standards, and educates the public about fire protection methods and responsibilities.

California Fire Code (Title 24, Part 9 of the California Code of Regulations)
The California Fire Code (CFC) is enforced statewide to safeguard life and property from hazards such as fire and explosion which are bought about from the storage, handling, and use of hazardous material and devices. It includes Section 322, regulating the proper storage of lithium-ion and lithium metal batteries. The CFC sets standards for fire prevention and safety to ensure adequate and time sensitive response in the event of a fire.

Regional/Local

Twentynine Palms General Plan
Updated in 2012, the City's General Plan Safety Element addresses concerns for hazardous materials and establishes goals, policies, and regulations which are intended to reduce the exposure and probability of harm to human life, property, and the environment.

Safety Element

Policy SF-2.4 Prohibit new facilities that use or store hazardous materials in quantities that would place them in the State's TRI or SQG database from being located in the flood zone (Zone A, AO, and X), unless all standards of elevation, anchoring and flood proofing have been implemented to the satisfaction of the City Building Department, and the Twentynine Palms Fire Department.

Policy SF-5.3 Identify roadways along which hazardous materials are routinely transported. If the route is located near a critical facility such as a school, medical facility, childcare center, or other facility, the City must identify emergency response plans that can be implemented in the event of a roadway accident nearby that result in the authorized release of hazardous material.

Policy SF-5.5 Prohibit new facilities that produce, use, store, transport, or dispose of hazardous materials from being located within the 100-year floodplain (unless all standards of elevation, anchoring, and flood proofing have been implemented), from within a fault zone or from within an area to liquefaction.

Policy SF-5.10 New developments are required to conduct a Phase I Environmental Site Assessment, prepared in accordance with the latest ASTM protocol. If the study concludes with recommended mitigation measures, the project is required to implement said measures.

2.10.4 Environmental Setting

A hazardous material is a substance with properties identified as dangerous or capable of causing harmful effects to humans or the environment. More specifically, the state of California identifies hazardous material based on whether the substance was determined to:

(1) "cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness"; or
(2) "poses a substantial present or potential hazard to human health or the environment when it is improperly treated, stored, transported, disposed, and managed" (CCR § 66261.10).

Additionally, the DTSC identifies hazardous material based on whether the substance is toxic, ignitable, corrosive, or reactive.[1]

Industrial, emergency service, or other business facilities and residential homes are generators of hazardous waste. Examples of facilities that use, store, and dispose of hazardous material include dry-cleaners, service stations, medical labs, and photo processing centers. Industrial facilities can generate a larger quantity of hazardous waste if handling toxic substances involved in the operation of chemical manufacture, electroplating, or petroleum. Daily household items such as cleaners, batteries, paints, paint thinners, and adhesives are classified as hazardous waste. The improper use, transport, storage, or disposal of any of these hazardous wastes across all areas can have public safety, health and legal ramifications.

Federal and state policies strictly regulate the handling of hazardous waste to avoid the severe effects of releasing toxic chemicals into the open. All facilities that exceed regulatory limits are required to disclose the quantity of hazardous waste at their facility in a Hazardous Material Business Plan. Businesses that fail to adequately fulfill all requirements may mishandle hazardous waste and therefore be out of compliance with federal and state regulations.

In the City of Twentynine Palms, many types of facilities produce and manage hazardous waste. City records show that as of 2009 there were 11 facilities in operation as small quantity generators (SQG) of hazardous waste and 2 additional facilities whose classification as small or large quantity generator (LQG) was not specified[2]. The EPA defines small SQG as a facility that produces between

[1] California Department of Toxic Substances Control, "Defining Hazardous Waste", https://dtsc.ca.gov/defining-hazardous-waste/, accessed March 2024.
[2] City of Twentynine Palms General Plan, Safety Element, 2012.

100 to 1,000 kg of hazardous waste per month (or between 27 to 275 gallons per month). A LQG is defined as a facility that produced over 1,000 kg (or more than 270 gallons) of hazardous waste per month.[3] In Twentynine Palms, the MCAGCC, which is located about 5 miles northeast of the Project site, was identified as a LQG of hazardous waste. The Toxic Release Inventory (TRI) database identified that substances released on- or off-site from the MCAGCC include copper, lead compounds, mixed isomers, ethylene, glycol, nitroglycerin, and phosphorus.[4] In most cases soil was impacted, and after cleanup the sites were closed from further use.

According to updated records from the EPA database, the City currently (2025) consists of 6 SQG facilities and 3 LQG facilities. Table 2.10-1 identifies each facility, location, and hazardous waste classification. None of these facilities are in proximity to the Project site.

Table 2.10-1
Active Hazardous Waste Generators in Twentynine Palms

Site ID	Site Name	Address
Small Quantity Generators		
CAD981680614	Circle K Store #348	Abode and Two Mile Road
CAD981679293	Circle K Store #743	73943 Twentynine Palms Hwy
CAD000007005	Equity Resources Corp	76161 Baseline Road
CAD000190074	Rite Aid #5685	72253 Twentynine Palms Hwy
CAD981637614	Sparkle Plenty Laundry	73892 Twentynine Palms
CAD983651878	Westwind Aero Twentynine Palms Airport	78569 Twentynine Palms Hwy
Large Quantity Generators		
CAD 981389240	Joshua Tree National Monument	74485 National Monument Drive
CAL000379958	Rite Aid #5685	72253 Twentynine Palms Hwy
CAL000340408	Twentynine Palms Water District Well #11	67350 Twentynine Palms Hwy
Source: U.S. Environmental Protection Agency Database, "Hazardous Waste Generators", https://www.epa.gov/hwgenerators, accessed February 2025.		

[3] US Environmental Protection Agency, "Categories of Hazardous Waste Generators", https://www.epa.gov/hwgenerators/categories-hazardous-waste-generators, accessed February 2025.

[4] City of Twentynine Palms General Plan, Safety Element, 2012.

Currently, there are no active Superfund National Priorities List (NPL) cleanup sites in Twentynine Palms. Additionally, the DTSC's Hazardous Waste and Substance Site database (Cortese List) does not list an active hazardous material release site in Twentynine Palms or within 1 mile of the Project. [5]

2.10.5 Existing Conditions

The Project site is currently vacant, undeveloped desert land.

Historical Onsite Land Uses

The site has been vacant and undeveloped land with multiple narrow washes since at least 1956, according to historical photographs and topographic maps. The Project's surroundings consist mostly of vacant and undeveloped lands except for the Carodean Substation, a church and rural residential properties that were constructed between 1983 and 1994.[6] The lack of development and industrial uses on-site results in no history of hazardous material use or storage. No hazardous sites are located within the Project's vicinity or onsite.

Schools

The Morongo Unified School District (MUSD) provides K-12 public education services to the entire Morongo Basin including Twentynine Palms. Within the City, the MUSD operates four elementary schools, one junior high school, and one high school. No schools are located within the Project's vicinity. The nearest is Twentynine Palms High School located approximately five miles to the southeast.

Fire Hazard

The Project site is not identified by Cal Fire as within a mapped Fire Hazard Severity Zone.[7] At a local level, the General Plan Update identifies the Project's area as a Moderate Fire Hazard Severity Zone. Vegetation on the Project site is comprised of widely distributed creosote scrub with a mix of perennial shrubs and herbaceous annuals.

Primary Emergency Evacuation Routes

Emergency evacuation routes in Twentynine Palms include Twentynine Palms Highway (SR-62), Two Mile Road, Sunrise Avenue, Morongo Road, Mesquite Street, Adobe Road and Utah Trail. The Project is located north of Two Mile Road. A private driveway consisting of a compacted gravel surface, extending

5 Dudek, "E-Group PS Solar Project Hazardous Materials Technical Memorandum", February 2024.

6 Dudek, "E-Group PS Solar Project Hazardous Materials Technical Memorandum", February 2024

7 Dudek, E-Group PS Solar Project – Hazardous Materials Technical Memorandum, February 2024

approximately 36 feet in width and 2,678 feet in length, will provide direct access to Two Mile Road from the site. Relative to the Project, SR-62 is located south beyond Two Mile Road, and Sunrise Avenue, Morongo Road, Mesquite Street, Adobe Road, and Utah Trail are located to the east. The Project does not propose modification or change to any roadways in Twentynine Palms.

2.10.6 Project Impacts

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Solar Project Impacts

A project-specific Phase I Environmental Site Assessment (ESA) report was prepared by RSB Environmental on July 28, 2020. The ESA evaluates the eastern parcel's (APN-0612-201-05) environmental conditions to determine whether the site and/or surrounding lands are or have been previously used for hazardous waste disposal or impacted by hazardous substances. Analysis for the report included database research, review of historical records and aerial photographs, and a field survey at and near the Project site.

Existing Land Use
The site is currently undeveloped and vacant. No development has occurred in the surrounding areas to the north, south, or east of the Project site. No oil or gas pipelines or wells are located at the Project site or on adjoining properties.

Based on a topographic map provided by the United State Geological Survey (USGS), the Project site is located 2,227± feet above mean sea level (MSL) and gradually slopes east to northeast. The on-site soil consists of Quaternary alluvium and marine deposits from the Pliocene era. Within the Project area, there are slopes formed by regional water flow that characterize the site's northcentral portion where riverine wetlands are identified as crossing the southwestern to the northeastern portion of the property. Although water courses cross the parcel, there is minimal concern for flooding events given that the subject site and its surrounding area are located within a designated FEMA Zone X. This flood zone is associated with areas found to be outside a 500-year flood hazard zone[8] and thus, the likelihood for inundation at the property is low.

Environmental Database Records
Information from standard federal, state, and tribal environmental record sources were provided through the Ecolog Environmental Risk Information Services Ltd.

[8] FEMA Glossary for Zone C or X, Federal Emergency Management Agency (FEMA), updated April 2023.

(ERIS). These sources were reviewed for the potential of on-site and/or off-site recognized environmental conditions (RECs), controlled recognized environmental conditions (CRECs), and Historical Recognized Environmental Conditions (HRECs) and de minimis conditions as defined by ASTM Standard E1527-13. Table 2.10-2 summarizes the results from the database investigation.

Table 2.10-2
Review of Environmental Records

Standard Environmental Record Sources	Minimum Searched Distance (mi)	Identified at the subject site	Identified at the off-site property
Federal CERCLIS	0.5	No	No
Federal CERCLIS NFRAP	0.5	No	No
Federal Delisted NPL	0.5	No	No
Federal ERNS	Property Only	No	No
Federal IC/EC	0.25	No	No
Federal NPDES	0.50	No	No
Federal NPL	1.00	No	No
Federal RCRA CORRACTS	1.00	No	No
Federal RCRA Generators	Property and Adjoining	No	No
Federal RCRA non-CORRACTS TSD	0.50	No	No
State and Tribal Brownfield Sites	0.50	No	No
State and Tribal Hazardous Waste Sites (CERLCIS Equivalent)	0.50	No	No
State and Tribal Hazardous Waste Sites (NPL Equivalent)	0.50	No	No
State and Tribal Leaking Tanks	0.50	No	No
State and Tribal Registered UST and AST	Property and Adjoining	No	No
State and Tribal Voluntary Cleanup	0.50	No	No
Additional Environmental Records	Property and Adjoining	No	No
Source: RSB, Environmental, Phase I Environmental Site Assessment Report for Vacant Land with Parcel ID: 0612-201-05, July 2020.			

There are no federal, state, or tribal listed hazardous sites at or near the Project site. The probability for existing hazardous conditions to affect the property or for cumulative impacts to occur as a result of the Project's implementation are negligible.

The investigation identified a riverine wetland traveling across the property boundary from the southwestern portion towards the northeastern portion. The Phase 1 ESA (Appendix G) recommended the completion of a jurisdictional delineation to determine whether this was a federal wetland. Please Section 2.5 (Biological Resources) of this EIR for further analysis on wetlands and protection measures.

Historical Records and Aerial Photographs
Based on available historical information, the Project site has remained undeveloped at least from 1948 to present. Available aerial photographs dated 1948, 1953, 1970, 1983, 1994, 2005, 2010, 2012, and 2018, show the site as undeveloped. Development in proximity to the site began in 1994 with the construction of buildings on the south side of Two Mile Road. In 2005, 2010, 2012, and 2018, development further evolved to what exists today.

Property Reconnaissance
A field survey was conducted consisting of visual and/or physical observations of the Project site, off-site improvement area, and adjoining properties. Based on observations, there were no petroleum products, storage tanks, noxious odors, wastewater, wells, and septic systems. The same conditions were observed within the surrounding properties. No source with the potential to cause hazardous impacts was detected at or near the site at the time of the field survey. The probability for related impacts to occur are negligible.

Conclusion
According to the information sourced during the investigation, as well as the visual and physical observations recorded during the field survey, there are no existing hazardous conditions at or near the site.

Solar Project Impacts
The following analysis identifies sources of hazardous waste generated during construction and operation of the Solar Project and off-site area and addresses their respective probability for hazardous impact.

Construction
The proposed solar facility is situated on the northern 184± acres of the site. Construction will involve site grading to remove existing desert vegetation and debris, and redistribute soil to level the ground surface prior to installation of solar panel racks. Construction of the Project would consist of 3 phases including site preparation, photovoltaic panel system installation, and equipment interconnection. Construction would occur over a 9 month period, and include site improvements, the construction of the access driveway and the interconnection of the Project site to the electric substation to the southwest.

Hazardous materials typically occurring at construction sites include gasoline, diesel fuel, oil, lubricants, grease, welding gases, solvents, and paints. If used, these chemicals must be stored in closed containers and placed in a secured location so as to avoid spillage or flood induced spillage, consistent with the requirements of CalOSHA, the Fire Department and the City. The transport, use, storage, and disposal and general management of construction related hazardous substances would be subject to federal, state, and local regulations, designed to reduce the likelihood for impact to less than significant levels. Construction of the Project is therefore not anticipated to produce, use, store, transport, or dispose of hazardous waste in violation to regulatory standards.

Construction waste will be generated from the installation of the solar arrays and related components. Construction waste will be limited and consist primarily of recyclable material including cardboard, steel, and electrical wiring. The diversion of solid waste to a recycling facility, consistent with Municipal Code Section 18.14.060 (Waste Management Plan) reduces the Project's cumulative contribution to the local landfill. This requirement is also included as Mitigation Measure HAZ-1, to ensure compliance. The Project contractor will be required to employ a waste and recycling service provider to ensure all solid waste generated from the Project's construction is disposed of in accordance with federal and state regulations. Additionally, the Project contractor will store, collect, and dispose of solid waste in a manner prescribed by CalOSHA and the City's standards and requirements. All construction waste will be separated and collected in temporary dumpsters and trucked to the Burrtec waste disposal facility for recycling and processing. With implementation of Mitigation Measure HAZ-1, impacts associated with construction of the proposed Project will be reduced to less than significant levels. (Please also see Section 2.19, Utilities and Service Systems)

Operation

Equipment at buildout will include 160,000 solar panels, rows of 720 ground-mounted steel racks, and underground cabling routing generated energy to an on-site transformer at the south-central boundary of the property. Service roads are mapped throughout the site including a prefabricated steel bridge to provide connectively across the western water channel transversing the site.

Once in operation, sources of hazardous waste would be limited to the on-site transformer. The transformer will be located at the south end of the solar array and placed on concrete pads reinforced with structural rebar. The transformer will produce used biodegradable dielectric fluid and mineral oil. The used oil will be collected, recycled, and transferred off-site by maintenance personnel in compliance with local, County and State law. No used oil will be stored at the property.

As addressed in Section 2.10, Hydrology, the Project has the potential to result in both waste and limited hazardous materials associated with maintenance, including transformer oils, damaged or defective solar panels, and other materials associated with operation of the solar array. In order to protect surface waters on-site, the Project will be required to prepare a Spill Prevention, Control and Countermeasure Plan (SPCCP), as specified in Mitigation Measure HYD-1. The SPCCP will provide measures to stop the source of a spill, contain it, clean up the spill, dispose of contaminated materials, and train personnel to prevent and control future spills. In addition, maintenance crews will truck waste off the Project site, and the Project will be conditioned by the City to remove all waste and prevent storage on the property.

Lastly and consistent with the construction phase, the quantity of oil and/or hazardous material and waste must be reported, and an appropriate plan must be prepared as mandated by federal, state, and local rules and regulations.

The level of hazardous materials used, or waste generated on-site is low. The Project site is not located on or in proximity to a site listed under the Cortese List. Therefore, the Project's operation would not cumulatively contribute to sites identified as hazardous by the state Department of Toxic Substance Control. Overall, the Project's construction and operation is not anticipated to create a significant hazard to the public or the environment through the construction and operation of the solar facility, with the implementation of Mitigation Measure HAZ-1.

End-of-Life Solar Panels

Beyond their utility, the solar panels are a contingent source of hazardous waste. Different types of solar panels contain toxic metals such as lead, arsenic, and cadmium in the semiconductor and solder, which are harmful to human health and the environment at high levels. If these metals are present on the solar panels in a high enough quantity, the disposal of solar panels could be categorized as hazardous waste, according to the Environmental Protection Agency (EPA). Most commonly, a solar panel is classified as hazardous waste if it meets the characteristics of toxicity. To determine whether a solar panel waste is hazardous waste, the RCRA requires a toxicity characteristic leaching procedural (TCLP) test to be conducted.[9] If identified as hazardous waste, federal, state, and local hazardous waste regulations are applied to solar panels when recycled or disposed. With the implementation of Mitigation Measure HAZ-2, potential impacts associated with the recycling or disposal of solar panels at their end-of-life will be less than significant.

[9] US Environmental Protection Agency, "End-of-Life Solar Panels: Regulations and Management", https://www.epa.gov/hw/end-life-solar-panels-regulations-and-management, accessed March 2024.

Residential GPA Impacts

The Residential GPA will not in and of itself generate a significant hazard to the public or environment. There will be no routine transport, use, or disposal of hazardous material associated with this component of the Project. While the Project does not propose immediate development of the GPA, future residential development may occur in the foreseeable future.

The construction of projects within the area of the Residential GPA would be subject to the same local, County and State regulations as the Solar Project, including compliance with CalOSHA requirements for the storage and use of oils, fuels and paints. These standards ensure that construction activities for the future homes will have less than significant impacts associated with hazardous materials.

Residential developments are typically small generators of hazardous waste due to their use and storage of products such as paints, cleaners, electronic devices (e-waste), and motor oil. Disposal of these household hazardous wastes is subject to state and local regulation. Burrtec Waste Industries, Inc. as part of its contract with the City of Twentynine Palms, offers roadside pickup of household hazardous waste to ensure the proper disposal of waste so as to avoid the probability for adverse effects to the environment and public health. Additionally, San Bernardino County offers Twentynine Palms residents a hazardous waste drop-off service station located in the community of Joshua Tree, approximately 10.36 miles southwest from the Project site. The site is open on the 3rd Saturday of every month between the hours of 9 am to 11 pm. The availability of these services ensure household waste will be safely disposed of by future Project residents.

In addition, future residential projects will reviewed by the City for conformance with CEQA at the time the project(s) are proposed. Compliance with state and local standards as stated in Twentynine Palms Municipal Code and CalOSHA will ensure potential impacts related to the transport, use, storage, and disposal of hazardous waste are adequately contained to lessen the probability for direct or indirect impact to less than significant levels.

Summary

The Project's on-site construction and operation will involve the use of hazardous material. The Project's construction (on- and off-site) will involve the transport, use, storage, and/or disposal of hazardous material including gasoline, diesel fuel, oil, lubricants, grease, welding gases, solvents, and paints. These substances will be subject to strict regulation as described above and as required in Mitigation Measure HAZ-1. Compliance with these measures will reduce the probability for hazardous impacts to less than significant levels.

During operation, the site will generate hazardous waste in the form of biodegradable dielectric fluid and mineral oil used to operate the transformer at the site. No hazardous material will be stored on-site during operation. Additionally, any on-site generated waste during construction and operation will be collected and disposed of in compliance with City standards and State law.

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.

Evidence for aboveground or underground storage tanks, clarifiers, sumps, or other potentially hazardous material-containing structures was not encountered within the site during site survey conducted for the Project site (Appendix G). No evidence of petroleum hydrocarbons and/or chemicals were encountered.

Solar Project Impacts

Construction and operation of the Solar Project would not result in a significant foreseeable upset in regard to release of hazardous materials with proper construction management and design. Cleaners, solvents, and other chemicals may be used on-site for routine maintenance. Their use will be in small amounts, regulated by Cal OSHA, the County Department of Environmental Health Services and the City Fire Department. These materials, if used, must be properly stored, handled and treated according to the regulations issued by the State of California (See Chapter 30, Title 22 of the CCR). None of those cleaners, solvents, or other potentially hazardous or toxic materials will be used in sufficient quantities or stored on-site to pose a threat to humans or cause a foreseeable chemical release into the environment.

The construction phase would require the use of heavy equipment, which involves some amount of oil and fuels and other potential flammable or otherwise hazardous substances. During construction, equipment would require refueling, lubricating and minor maintenance that could lead to fuel and oil spills. The contractor would be required to identify and prepare staging areas for refueling and storage, pursuant to CalOSHA standards. The proposed Solar Project would not result in a significant risk of explosion or accidental release of hazardous substances.

The Solar Project also calls for an on-site pad-mounted transformer to be located at the south-central boundary of the site. This transformer will convert the solar array power to a voltage compatible with that of the SCE system. The subject transformer will use biodegradable dielectric fluid and mineral oil with a less than significant potential for a hazardous materials release from this facility.

There is no foreseeable upset or accidental condition that could involve the release of hazardous material into the environment as a result of the Project's development. All federal, state, and local policies, programs, and municipal codes regarding the transportation, use, storage, and disposal of hazardous products will be adhered to by the Project. The application of BMPs set forth in mitigation measures HYD-1, HAZ-1 and HAZ-2 will further ensure that potential impacts relating to the handling of hazardous material will be reduced to less than significant levels.

Residential GPA Impacts

As previously discussed, the proposed GPA would not involve the use of substantial quantities of hazardous substances and thereby would not cause a foreseeable upset or accidental release of hazardous material into the environment. Residential units could be built in the future, when entitlement applications are filed. At the time of filing any such applications, future residential project(s) would be analyzed for adequacy in managing on-site sources of pollution by the City under its CEQA process. The review would also analyze potential sources of impacts related to the use of hazardous material during construction and operation. Future residential project(s) would be subject to the most current state and local standards controlling the transport, use, storage, and disposal of hazardous material. Under these regulatory practices, the probability for adverse effects to the environment or public health associated with the release of hazardous material in connection to the future residential development is limited, and is expected to result in a less than significant impact.

2.10.7 Mitigation Measures

In addition to federal, state, and local policies and ordinance codes governing the management of hazardous material, the following mitigation measures will serve to mitigate potential impacts of the Project related to hazardous materials.

HAZ-1 Prior to construction, a Hazardous Material Management Plan shall be prepared by the Applicant and submitted to the City for review and approval, to specify the method for handling and disposing of hazardous material related to the construction process.

HAZ-2 A toxicity characteristic leaching procedural (TCLP) test must be performed to determine the toxicity level of solar panel(s) prior to its being recycled or disposed. If the solar panel waste does not exceed the threshold to be defined as hazardous waste, no further action is required. If the solar panel's toxicity level exceeds the threshold and

is defined as hazardous waste, all federal, state, and local regulations regarding the disposal of hazardous waste will be applied to the solar panel's disposal, including the use of a qualified hauler, and disposal in a designated landfill.

2.10.8 Significance After Mitigation

After implementation of mitigation measures identified in Section 2.10.6 of this section would reduce potential impacts to less than significant levels.

2.10.9 Cumulative Impacts

The Project site is currently vacant. Future residential development may occur on the southern parcel, at which point the residential project would be subject to the most current state and local standards pertaining to the transport, use, storage, and disposal of hazardous materials and thus, potential cumulative impacts would be limited to below significance.

Similarly, future development projects in the City will be subject to the same local, regional and State laws governing hazardous materials. The standards applied to each project, based on its specific characteristics, will reduce cumulative impacts associated with hazardous materials to less than significant levels.

2.11 Hydrology and Water Quality

2.11.1 Introduction

This section describes existing hydrological conditions, including groundwater, surface water, water quality, stormwater, and flooding conditions within the Project area and evaluates potential impacts to hydrology and water quality that could result from implementation of the Project. The analysis in this section is based on the review of existing resources, applicable laws and regulations, Preliminary Drainage Study[1] (Appendix H.1), and the Hydrology and Hydraulic Technical Study[2] (Appendix H.2) and Stormwater Pollution Prevention Plan (Appendix I) prepared for the Solar Project.

2.11.2 Thresholds of Significance

The following thresholds or criteria are those recommended in §15064.7 of the CEQA Guidelines and Appendix G of the Guidelines, and are used to determine if and to what extent a project may have a potentially significant impact on area hydrology and water resources. The Project would have a significant effect if it would:

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 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 off-site;

[1] Preliminary Drainage Report for E-Group PS Solar Project, prepared by Dudek, January 2025.
[2] Hydrology and Hydraulic Technical Study for E-Group PS Solar Project, prepared by Dudek, January 2025.

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 Initial Study determined that the Project would result in "No Impact" for threshold question d) and e) above. Therefore, they are not analyzed further in this EIR.

2.11.3 Regulatory Framework

Federal

Clean Water Act

The Clean Water Act (CWA) was enacted by Congress in 1972 and amended several times since inception. It is the primary federal law regulating water quality in the United States and forms the basis for several state and local laws throughout the nation. Its objective is to reduce or eliminate water pollution in the nation's rivers, streams, lakes, and coastal waters. The CWA prescribes the basic federal laws for regulating discharges of pollutants and sets minimum water quality standards for all "waters of the United States."

Several mechanisms are employed to control domestic, industrial, and agricultural pollution under the CWA. At the federal level, the CWA is administered by the U.S. Environmental Protection Agency (USEPA). At the state and regional level, the CWA is administered and enforced by the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCB). The State of California has developed several water quality laws, rules, and regulations, in part to assist in the implementation of the CWA and related federally mandated water quality requirements. In many cases, the federal requirements set minimum standards and policies, and the laws, rules, and regulations adopted by the State and regional boards exceed the federal requirements.

CWA Section 303(d) lists polluted water bodies which require further attention to support future beneficial uses. For each listed water body, the State of California is required to establish Total Maximum Daily Load (TMDL) criteria for the pollutant(s) causing conditions of impairment.

CWA Section 303(d) and Total Maximum Daily Loads (TMDLs)

The CWA contains two strategies for managing water quality. One is a technology-based approach that includes requirements to maintain a minimum level of pollutant management using the best available technology. The other is a water quality-based approach that relies on evaluating the condition of surface waters and setting limitations on the amount of pollution that the water resource can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA bridges these two strategies and requires that states make a list of waters that are not attaining standards after the technology-based limits are put into place.

For waters on this list, the states are required to develop total maximum daily loads or TMDLs. Total Maximum Daily Load (TMDL) refers to the amount of a specific pollutant a river, stream, or lake can assimilate and still meet federal water quality standards as provided in the CWA and addressed in the CWA 401 permit application. TMDL accounts for all sources of pollution, including point sources, non-point sources, and natural background sources. Section 303(d) requires that regulatory agencies determine TMDLs for all water bodies that do not meet water quality standards.

Section 303(d) list of impaired water bodies provides a prioritization and schedule for the development of TMDLS for the state. In compliance with Section 303(d) of the CWA (33 U.S. Code [USC] Section 1313[d], the SWRCB prepared, and USEPA approved, a 2010 list of impaired water bodies in California. The list includes a priority schedule for the development of TMDLs for each contaminant or "stressor" impacting the water body.

According to the U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) Mapper and National Hydrography Dataset (NHD), there is a series of riverine features and intermittent streams flowing from south to north and west to east throughout the site.[3] All features are ephemeral streams that experience temporary flow during rainfall events. There are no tributaries or impaired water bodies downstream of the site.[4]

[3] Preliminary Drainage Report for E-Group PS Solar Project, prepared by Dudek, January 2025
[4] Ibid.

National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP), which provides flood insurance, floodplain management, and flood hazard mapping. Communities subject to flood hazards voluntarily participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce the potential for flood damage. In turn, the NFIP offers federally funded flood insurance to homeowners, renters, and business owners in participating communities. Under this program, FEMA produces Flood Insurance Rate Maps (FIRM) that identify properties and buildings in flood insurance risk areas. Flood hazards related to storm events are generally described in terms of 100- or 500-year floods with a 1 percent and 0.2 percent chance, respectively, of occurring every year.

The City and the County of San Bernardino are both participants in the NFIP. As such, residents within these jurisdictions are eligible to purchase flood insurance if located in areas with a high risk of flooding. FEMA requires each participating jurisdiction to adopt a floodplain management ordinance to ensure that any new construction and/or substantial improvement within a mapped floodplain occurs in a manner that reduces potential damage to the public and property and discourages new development within floodways.

National Pollutant Discharge Elimination System

The CWA has nationally regulated the discharge of pollutants to the waters of the U.S. from any point source since 1972. In 1987, amendments to the CWA added section 402(p), which established a framework for regulating nonpoint source (NPS) stormwater discharges under the National Pollutant Discharge Elimination System (NPDES). Section 402 of the CWA authorizes the State Water Resources Control Board to issue a NPDES General Construction Storm Water Permit (Water Quality Order 2009-0009-DWQ), referred to as the "Construction General Permit." The NPDES General Construction Permit Requirements apply to clearing, grading, and disturbances to the ground, such as excavation. Construction activities on one or more acres, including the proposed Project, are subject to a series of permitting requirements contained in the NPDES General Construction Permit. This permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes Best Management Practices (BMPs) to be implemented during project construction.

Regional Water Quality Control Board – 401 Certification

Pursuant to Section 401 of the CWA and EPA 404(b)(1) guidelines, in order for a United States Army Corps of Engineers (USACE) federal permit applicant to conduct any activity that may result in discharge into navigable waters, the applicant must provide a certification from the RWQCB that such discharge will comply with State water quality standards. The RWCQB has a policy of no-net-loss

of wetlands and typically requires mitigation for all impact to wetlands before it will issue water quality certification. To meet RWQCB 401 Certification standards, it is necessary to address all hydrologic issues related to a project, including:

- Wetlands;
- Watershed hydrograph modification;
- Proposed riverine related modifications; and
- Long term post-construction water quality.

State

Porter-Cologne Water Quality Control Act (PCWQCA)

California's primary statute governing water quality and water pollution issues is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resource Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) broad powers to protect water quality and is the primary vehicle for implementing California's responsibilities under the federal CWA.

The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to (1) adopt plans and policies; (2) regulate discharges to surface water and groundwater; (3) regulate waste disposal sites; and (4) require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, and oil or petroleum products.

Each RWQCB must formulate and adopt a water quality plan (or Basin Plan) for its region. The regional plans conform to the policies set forth in the Porter-Cologne Act and those established by the SWRCB in its State Water Policy. The Porter-Cologne Act also enables the RWQCBs to include water discharge prohibitions applicable to particular conditions, areas, or types of waste within its regional plan. The RWQCBs are also authorized to (1) enforce discharge limitations; (2) take actions to prevent violations of these limitations from occurring; and (3) conduct investigations to determine the quality of any of the waters of the State. Civil and criminal penalties are imposed on persons who violate the requirements of the Porter-Cologne Act or any SWRCB/RWQCB orders.

The Project is located within the jurisdiction of the Colorado River Basin Regional Water Quality Control Board (RWQCB) which has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction. In this jurisdiction, all discharges to surface waters are subject to the Colorado River Basin Plan.

California Department of Water Resources

The California Department of Water Resource (DWA) is a state agency responsible for managing and protecting California's water resources. Key responsibilities of the DWA include operating the State Water Project, which delivers water to millions of Californians, maintaining flood control systems, assisting in emergency management to safeguard life and property, ensuring dam safety, and promoting water conservation and climate resilience. DWR also collaborates with local agencies and stakeholders to address challenges like droughts, floods, watershed and river restoration programs, and long-term water security for the state.

Streambed Alteration Agreement (CA Fish and Game Code)

The California Department of Fish and Wildlife (CDFW) administers the Lake and Streambed Alteration Agreement (LSAA) program under Section 1602 of the Fish and Game Code which protects the natural flow, bed, channel, and bank of any river, stream, or lake designated by CDFW in which there is, at any time, any existing fish or wildlife resources, or benefit for the resources. Section 1602 requires any person, agency, or utility to notify CDFW before undertaking activities that substantially divert or obstruct the natural flow of, or alter the bed, channel, or bank of, any river, stream, or lake, or deposit debris where it may enter these waterways.

Municipal Stormwater Permit (MS4)

A Municipal Storm Water Permit (MS4 permit) in California regulates stormwater discharges from municipal separate storm sewer systems (MS4s). The region of San Bernardino County where the Project is located is not regulated under a Small MS4 Permit. The only stormwater discharge requirements associated with work in the Project region fall under the Section 402 Construction General Permit.

Regional/Local

Colorado River Basin Regional Water Quality Control Board (RWQCB)

The Project planning area is under the jurisdiction of the Colorado River Basin RWQCB, which is responsible for the preparation and implementation of the water quality control plan for the basin. The Basin Plan defines the beneficial uses, water quality objectives, implementation programs, and monitoring and assessment programs for the waters in the region. Specifically, the Basin Plan designates beneficial uses for surface water and groundwater; sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy; describes implementation programs to protect the beneficial uses of all waters in the region; and describes surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan.

The Colorado River Basin RWQCB issues permits (i.e., waste discharge requirements and master reclamation permits) which require that waste and reclaimed water not be discharged in a manner that would cause an exceedance of applicable water quality objectives or adversely affect beneficial uses designated in the Basin Plan. The Colorado River Basin RWQCB enforces these permits through a variety of administrative means.

San Bernardino County Flood Control District (SBFCD)

The San Bernardino County Flood Control District (SBFCD) is responsible for managing regional drainage within and in the vicinity of Twentynine Palms. The City works with SBFCD to manage local drainages in the City, which are divided between well-defined drainage courses (some have been channelized) and areas of wide sheet flow. Development that may alter the direction of flow onsite are conditioned per standard San Bernardino County practices to maintain the existing site drainage patterns at inlets and outlets.

Urban Water Management Plan

Twentynine Palms Water District (TPWD) manages and distributes the local ground water supply in the City of Twentynine Palms and portions of the surrounding unincorporated areas of San Bernardino County. The District's water service area spans 87 square miles, maintaining 200 miles of pipeline and 17 million gallons of water storage capacity. The District's water supply source is 100 percent local groundwater extracted from four sub-basins south of the Pinto Mountain Fault, which are fed by rainfall in the Pinto Mountains.

As an urban water supplier, TPWD is mandated to prepare an Urban Water Management Plan (UWMP) per the California Water Code, undertaking water supply planning over a 20-year period in five-year increments, by analyzing existing and projected water supply opportunities including recycled water for existing and future demands, in normal, single-dry and multiple-dry years, and implementing conservation and efficient use of urban water supplies.

Assembly Bill 134 (2001) authorizes the TPWD to supply retail water to municipal customers and mandates the creation of a Groundwater Management Plan (GWMP) per Water Code Section 10753, originally established by Assembly Bill 3030 (AB 3030). AB 3030 emphasizes groundwater as a critical resource requiring careful management for safe production and quality, promoting cooperative local management. Senate Bill 1938 (SB 1938), enacted on September 16, 2002, amended and expanded the Water Code provisions from AB 3030. The District's 2014 GWMP incorporates all required and optional elements from SB 1938, AB 359, and AB 3030, as well as components suggested by DWR Bulletin 118. This plan serves as a tool to ensure the District sustains safe, high-quality groundwater resources long-term.

City of Twentynine Palms Municipal Code

The City's Floodplain Management Regulations (Municipal Code Chapter 19.62) establishes a permit process to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas. Special consideration and development standards are applied to properties that are located within FEMA's 100-year Floodplain Overlay and the Indian Cove/Mesquite Drainage Area Overlay. A special flood hazard area is defined as an area shown on a flood hazard boundary map or FIRM as Zone A, AO, or AE.

City of Twentynine Palms General Plan

The City's General Plan under the Safety Element and Conservation and Open Space Element lists the City's objectives, policies, and programs to reduce and minimize risks associated with flood hazards and impacts to water quality, while promoting sustainable groundwater management. The following are applicable to the proposed Project.

Safety Element

Goal SF-2 Minimize injury, loss of life, property damage and economic and social disruption caused by flooding hazards.

Policy SF-2.2 Require new development within the 100 year flood plain or repeat flood properties as identified by the Federal Emergency Management Agency (FEMA) to conduct hydrological studies, prepared by a State-certified engineer, to assess the potential impacts the new development will have on the flooding and sedimentation potential of existing development down-grade and implement appropriate mitigation measures to reduce this impact to an acceptable level.

Policy SF-2.3 The City shall participate in the National Flood Insurance Program and encourage that all owners of properties located within the 100-year floodplain (Zones A and AO), and repeat-flood properties in Zone X to purchase and keep flood insurance for those properties.

Conservation and Open Space Element

Policy CO-3.2 Require that all new development within the City comply with City, water district and state mandates concerning the conservation and treatment of water.

Policy CO-3.6 Enforce regulations aimed at reducing groundwater and urban runoff pollution, including the National Pollutant Discharge Elimination System (NPDES) requirements of the Regional Water Quality Control Board.

Policy CO-3.7 Enforce regulations and guidelines for the development and maintenance of project-specific on-site retention/detention basins, which implement the NPDES program, enhance groundwater recharge, and complement regional flood control facilities.

Policy CO-3.10 Evaluate all proposed land use and development plans for their potential to create groundwater contamination hazards from point and non-point sources and confer with other applicable agencies to assure adequate review.

Policy CO-3.13 Adopt regulations to require new development to incorporate features into site drainage plans to reduce impermeable surface area, increase surface water infiltration and minimize surface water runoff during storm events.

2.11.4 Environmental Setting

The City of Twentynine Palms is located in the Morongo Basin which forms the southwestern corner of the Mojave Desert at an elevation of approximately 2,000 feet above sea level. The Mojave Desert is characterized by hot summer temperatures, averaging over 100 degrees Fahrenheit [°F], and low annual precipitation, approximately five (5) inches.

Local Drainage Patterns

Twentynine Palms is located at the base of the Copper, Bullion, Valley, Little San Bernardino, and Pinto mountain ranges. The City has no rivers or perennial streams, and the drainage system is shaped by ephemeral watercourses that flow from these ranges into the city. Most watercourses direct runoff toward the central portion of the city before continuing east, while those in the western areas and unincorporated northwest drain northeasterly toward Mesquite Lake near the Adobe Road entrance of the MCAGCG. These watercourses rarely reach larger bodies of water, instead dissipating through soil percolation or evaporation, with dry lake beds like Mesquite, Cones, and Shortz Lakes acting as natural sinks. During major storms, they serve as flood corridors, with FEMA-designated floodplains expanding widely across the central city, though regular events are typically managed within the natural channels.

The Twentynine Palms Channel, the only major drainage structure in the city, was designed and constructed to protect the central business district and downtown area. The San Bernardino County Flood Control District (SBFCD) is responsible for managing regional drainage within and in the vicinity of Twentynine Palms. The City works with SBFCD to manage local drainages in the city, which are divided between well-defined drainage courses (some have been channelized) and areas of wide sheet flow. Development that may alter the direction of flow onsite is conditioned per standard San Bernardino County practices to maintain the existing site drainage patterns at inlets and outlets.

Water Resources

The Twentynine Palms Water District (TPWD or District) depends entirely on groundwater from two non-adjudicated basins: the Twentynine Palms Valley Basin and the Joshua Tree Basin. The Twentynine Palms Valley Basin includes the Mesquite Lake and Mainside subbasins, while the Joshua Tree Basin comprises the Indian Cove, Fortynine Palms, and Eastern subbasins. The District also overlies part of the Dale Valley Basin, but this area has minimal pumping activity, limited historical data, and no District production wells. All water supplied by TPWD is extracted from groundwater via supply wells situated along the southern boundary of its service area. As of 2016, the District operates seven active production wells.

Water shortages can occur from natural occurrences such as drought, earthquakes, fires, system failures and water quality contamination. The 2020 Urban Water Management Plan Update (UWMPU) shows that the District has adequate supplies to meet demands during normal, single-dry, and multiple-dry years throughout the 20-year planning period. In addition, there is sufficient production capacity planned to meet projected future demands with the actions the District is taking to maintain supply availability.

The District supports water waste prevention activities and ordinances through both direct Board activities and in collaboration with the City of Twentynine Palms. The District actively supports the City in establishing terms of service for water efficient fixtures and design as required by state law. The City has adopted AB 1881 by statute and is enforcing California Green Building Code requirements through building permits. In February 2011 the District adopted Resolution 11-02 supporting the Model Landscape Water Ordinance and the California Green building standards. The District also has a Water Shortage Contingency Plan (WSCP) that identifies six stages of water shortage which correspond to progressive ranges of percentage supply reductions from zero to more than fifty percent, with corresponding District actions for each stage.

The Sustainable Groundwater Management Act (SGMA), enacted in 2014, establishes a framework for sustainable groundwater management in California, empowering local agencies to oversee groundwater resources. Under SGMA, the California Department of Water Resources (DWR) classifies groundwater basins into priority levels—high, medium, low, or very low—based on factors like population, groundwater use, and overdraft risk. High and medium-priority basins, as identified in DWR's 2019 Basin Prioritization, were required to form Groundwater Sustainability Agencies (GSAs) and develop Groundwater Sustainability Plans (GSPs) by January 31, 2022, to achieve sustainability within 20 years. The Twentynine Palms Water District's basins, however, are designated as very low priority, exempting them from these mandatory requirements due to minimal groundwater stress and extraction demands.

Water Quality

Groundwater pollutants in Twentynine Palms can generally be categorized as either urban runoff or septic tank wastewater migration. The quality of surface water in the region is significantly influenced by land use patterns that impact runoff, particularly from urban and industrial activities. Stormwater runoff can convey pollutants accumulated on impervious surfaces, subsequently degrading the water quality of receiving drainage channels and downstream water bodies.

In Twentynine Palms, NPDES permits are issued by the California Regional Water Quality Control Board, Colorado River Basin (RWQCB) as part of its Storm Water Program. The NPDES program coordinates the actions of all incorporated cities and the unincorporated portions of San Bernardino County within this region to regulate and control storm water and urban runoff within the Colorado River basin. The TPWD implements the standards of the Regional Water Quality Control Board (RWQCB) in its distribution of domestic water.

The water quality in the City is generally good, according to the District UWMP, though some areas experience elevated levels of fluoride and total dissolved solids. As previously stated, a notable groundwater contaminant is effluent from septic tanks, widely used in the City due to the absence of a centralized sewer system. This effluent is released into permeable leach fields or shallow soil, where it is treated by biological organisms or naturally degrades. However, septic effluent contains ammonia, chloride, phosphorus, sodium, potassium, boron, volatile organic compounds, and bacteria, which can significantly impair groundwater quality if septic systems malfunction.

2.11.5 Existing Conditions

Drainage Patterns and Flood Hazards

The topography of the Project site is characterized by an overall downward slope to the north. The maximum elevation is approximately 2,240 feet above mean sea level at the southern border of the site, and the minimum elevation is approximately 2,060 feet above mean sea level in the northeastern portion of the site. According to the Preliminary Drainage Study (Appendix H.1), the U.S. Fish and Wildlife Service identified a series of riverine features flowing from south to north and west to east throughout the site, while the National Hydrography Dataset (NHD) identified one intermittent stream flowing from south to north through the site and one intermittent stream flowing from west to east through the site (Exhibit 2.11-1 Surface Water Features). As described in Section 2.5 and in Appendix D.2 (Aquatic Resources Delineation), five ephemeral drainages traverse the Project site, which experience flow during rainfall events. All five drainages correlated with the mapped NHD drainage locations. Flow generated from these streams travels an additional 3.5 miles east/northeast to an alluvial fan just above a dry lakebed (Mesquite Lake). There is no additional confluence with other water bodies downstream from the site.

The project site is encompassed by FEMA flood Zone X, as identified in FIRM panel 06071C8190J (See Exhibit 2.11-2 FEMA Flood Map). Flood Zone X is described as outside of the 0.2 percent annual chance floodplain. Flood Zone X in this location has no detailed hydraulic analysis and no base flood elevation information available. The Preliminary Drainage Study also identified a 100-year Department of Water Resources (DWR) Awareness floodplain in the northwest portion of the project site. A 100-year DWR Awareness floodplain is an area with potential exposure to flooding for a storm flow that has a 1 percent chance of being equaled or exceeded in any year (100-year). Unlike FEMA's floodplain, the DWR Awareness floodplain does not directly trigger mandatory insurance or building regulations. Instead, it serves as a planning tool for local governments, developers, and residents to assess and mitigate flood risks voluntarily.

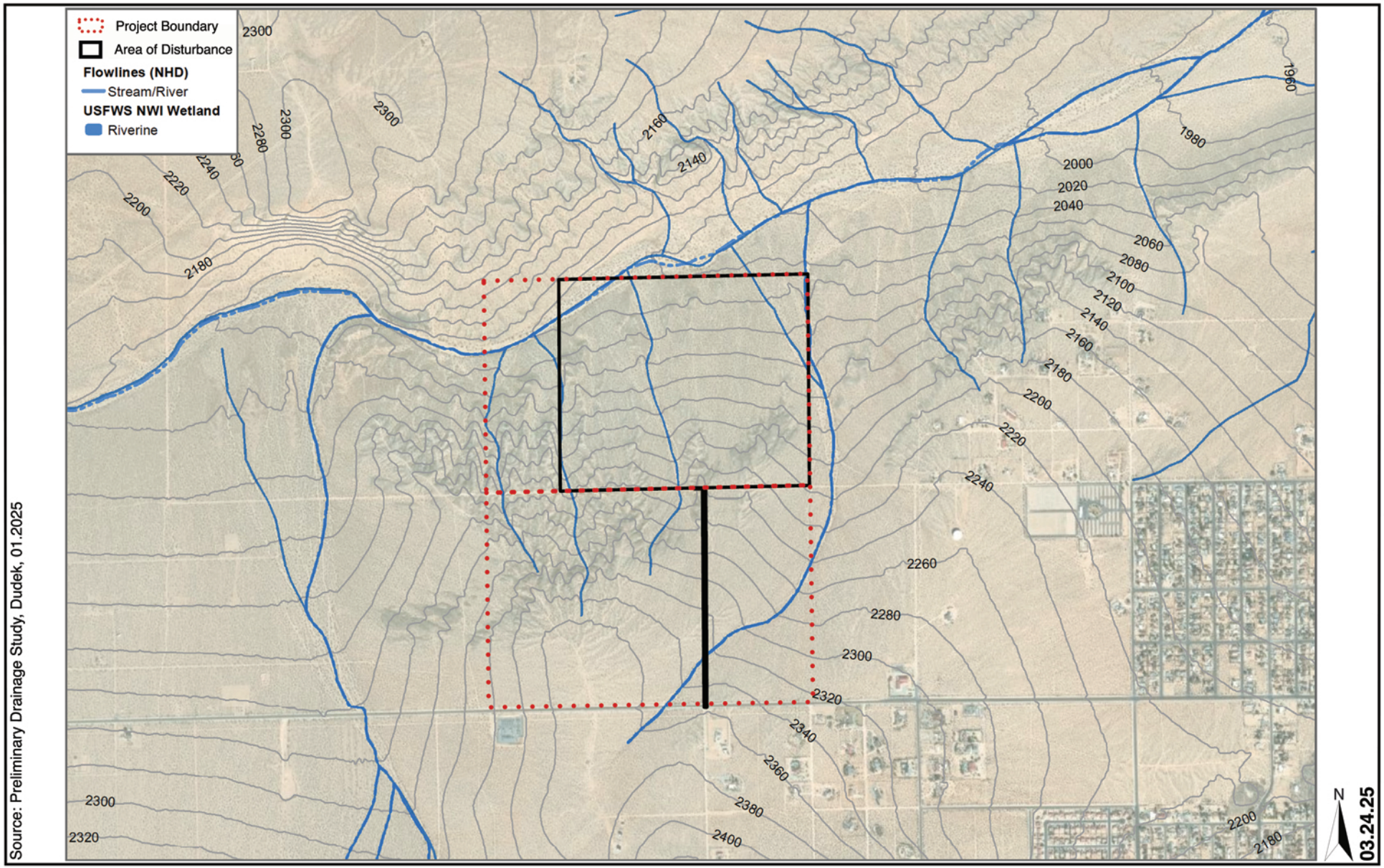
The project site is not vulnerable to sea-level rise, tsunami inundation, or seiche waves. For a site to be at risk from these hazards, it must be situated within a certain proximity and elevation relative to a coastline (in the case of sea-level rise or tsunamis) or a substantial body of water (for seiche waves). The project site, however, is at elevation greater than 2,000 feet above mean sea level and is not adjacent to any large water body prone to seiche activity.

Groundwater Resources

The Preliminary Drainage Report reviewed groundwater level data available through the State's SGMA Data Viewer. Per these data, water levels range between 1,772 feet above mean sea level (amsl) to 1,761 feet amsl, which equates to 194 feet below ground surface (bgs) to 205 feet bgs. Continuous water level data from a well located near the project site showed an overall declining trend between 1940 and 2013. TPWD has an existing groundwater pumping capacity of 7,720 AFY. To prevent overdrafting of the subbasins, DWR recommended pumping limits for both the Fortynine Palms and Indian Cove subbasins resulting in an overall limited pumping capacity at 6,995 AFY.

Wastewater Treatment

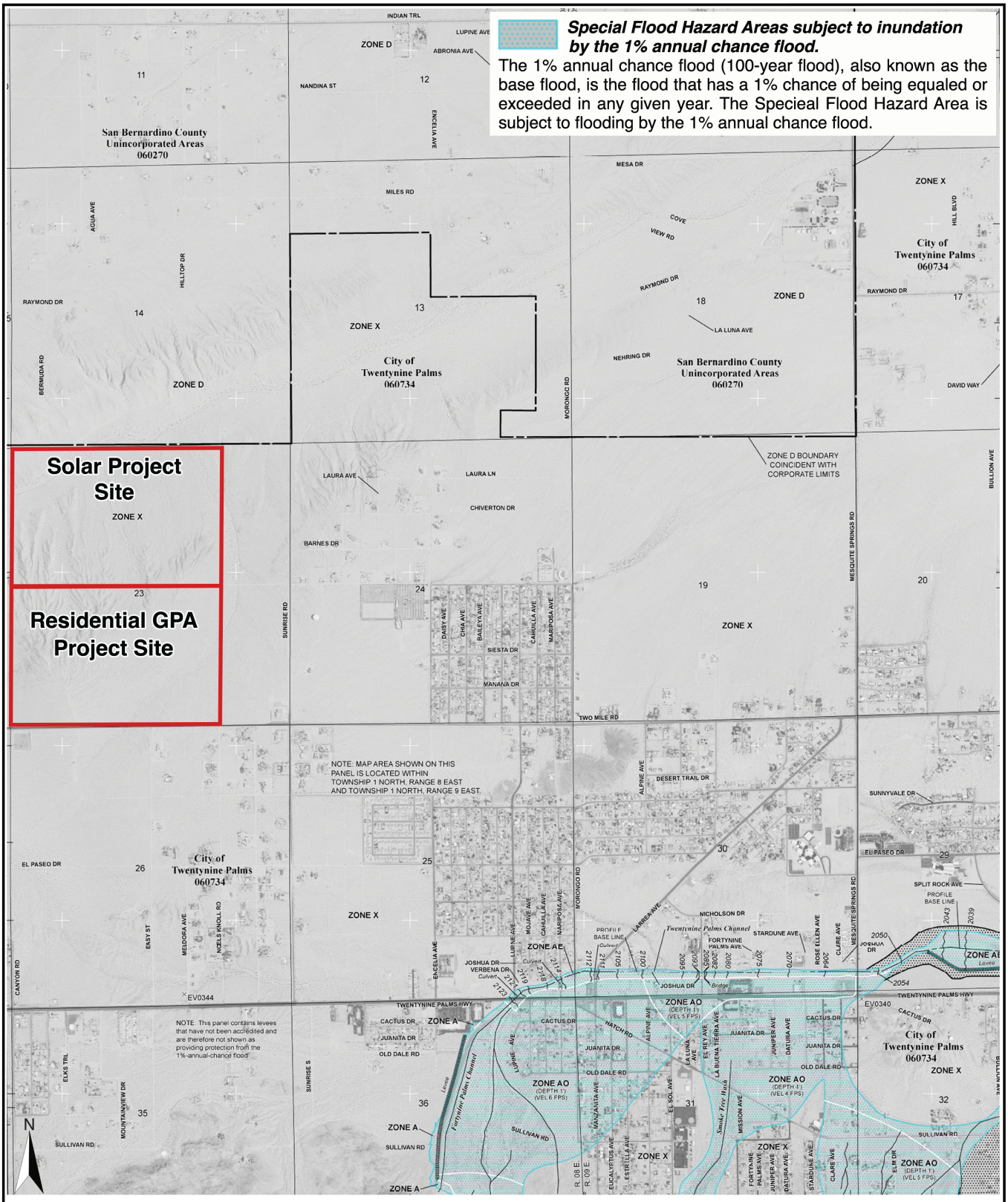
The only Wastewater Treatment Plant (WWTP) in the region is located at the MCAGCC. The facility treats all wastewater generated from the Mainside area of the MCAGCC. The City, including the Project area, does not have a sanitary sewer system and currently operates with septic tanks and package treatment plants.



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Surface Water Features
Solar Field Project
Twentynine Palms, California

Exhibit
2.11-1



Zone X: Areas determined to be outside the 0.2% annual chance floodplain.

Zone AO: Flood depth of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determied. For areas of alluvial fan flooding, velocities also determined.

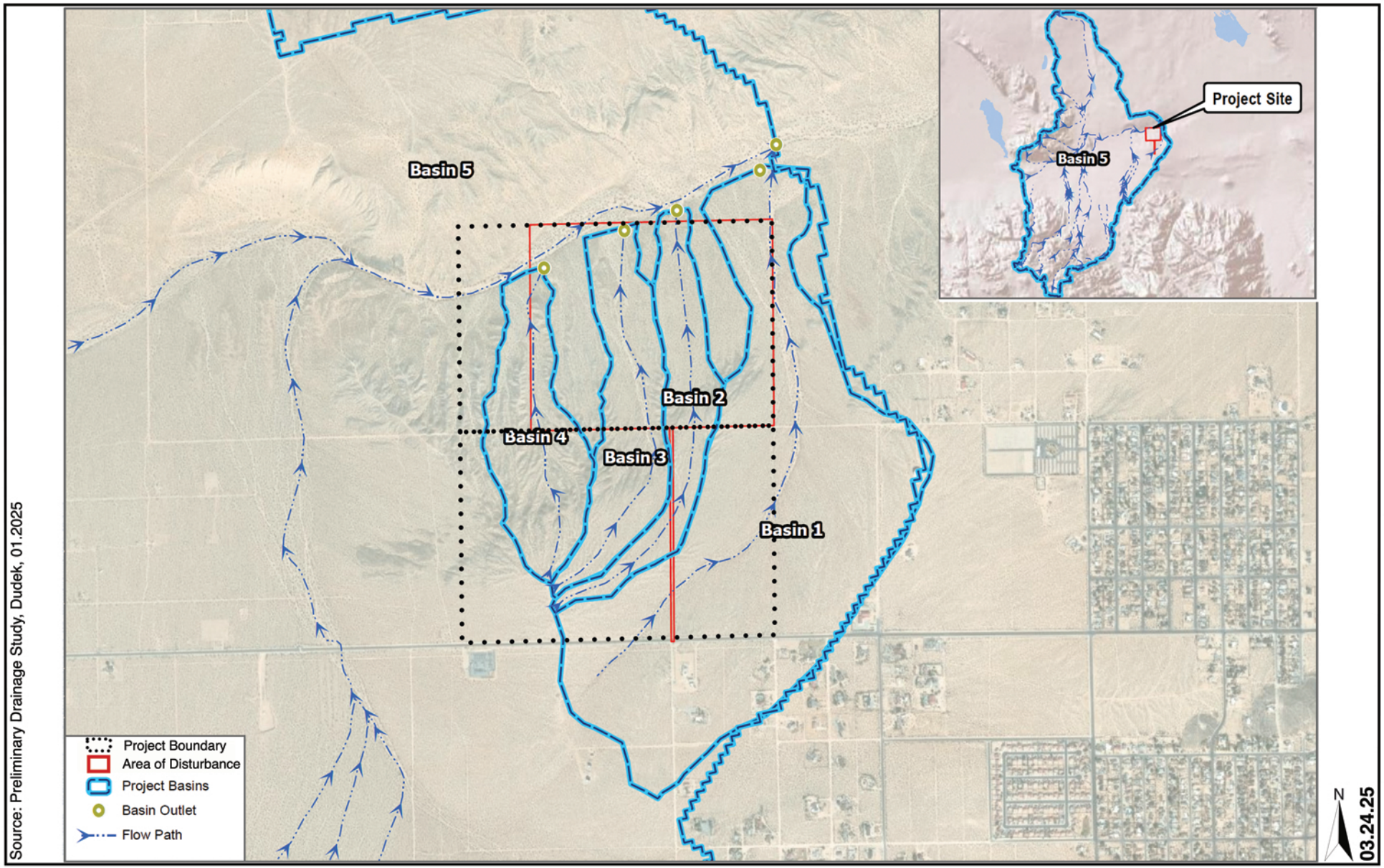
Source: Preliminary Drainage Study, Dudek, 01.2025

03.24.25

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FEMA Flood Map
Solar Field Project
Twentynine Palms, California

Exhibit
2.11-2



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Project Basins
Solar Field Project
Twentynine Palms, California

Exhibit
2.11-3

2.11.6 Project Impacts

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

Solar Project Impacts

Construction
For the Solar Project, most of the construction activities will be occurring within the Project site boundaries and within rights of way of Two Mile Road to the SCE Carodean substation. Construction activities will include grading and excavation, installation of the solar panels and dry wash prefabricated bridge crossing, installation of a perimeter fence, and the transport of materials. Construction activities at the site would entail the use of heavy equipment and associated potentially hazardous materials, such as fuels (gasoline and diesel), oils and lubricants, and cleaners (e.g., solvents, corrosives, soaps, detergents), which are commonly used in construction projects. During construction, accidental spills could occur and potentially cause a discharge of hazardous materials to surface or groundwater. BMPs such as drip pans and proper waste management would be used during construction activities to reduce pollutant and/or sediment mobilization to ensure compliance with Colorado River Basin Plan objectives and protection of beneficial uses.

Ground disturbance in drainage areas has a higher likelihood of resulting in erosion and sedimentation because water flow is more concentrated in these areas and has greater erosive potential. A Storm Water Pollution Prevention Plan (SWPPP, Appendix I) has been prepared and includes BMPs such as fiber rolls and silt fencing barriers which would limit the increase in sedimentation/siltation from construction activities on the project site which could otherwise temporarily violate Colorado River Basin Plan objectives for sediment.

The SWPPP must comply with California's General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (2022 CGP), State Water Resources Control Board (State Water Board) Order No. 2022-0057-DWQ (NPDES No. CAS000002) for traditional construction projects. The SWPPP also includes a construction site monitoring program that identifies specific requirements for dry weather visual observations of pollutants at all discharge locations, and any additional measures, as appropriate.

The following list includes examples of treatment control BMPs which could be employed during construction of the Project:

- Silt fences installed along limits of work and/or the construction site;
- Burlap fiber rolls;
- Street sweeping;
- Stabilize construction roadways;
- Wind erosion (dust) controls;
- Prevention of fluid leaks (inspections and drip pans) from vehicles;
- Materials pollution management;
- Proper waste management (e.g., concrete waste management);
- Regular inspections and maintenance of BMPs.

The Solar Project will be required to comply with NPDES regulations to minimize the pollutant load associated with construction activities. Meeting those standards requires the preparation and approval of a site-specific SWPPP, which must be approved by the City prior to the initiation of construction activities. A draft SWPPP has been prepared and is included as Appendix I. The SWPPP includes Best Management Practices that will protect surface waters from pollutants in storm flows during construction. Disposal of grease and oil would be required to comply with County and Regional Water Quality Control Board (RWQCB) regulations. Adherence to local, state and federal requirements will assure that construction impacts associated with water quality standards for the Solar Project are less than significant. Final approval of the SWPPP will occur with the issuance of grading permits for the Solar Project.

Operation

The City and RWQCB impose requirements for surface water protection. The project would primarily consist of photovoltaic panels on a fixed tilt foundation, inverters and transformers, electrical cabling and communication lines, on-site switchgear, generation interconnection (gen-tie) line, access roads, dry wash prefabricated bridge crossings, and security fencing. The proposed Solar Project will not generate demand for domestic water or wastewater treatment.

The Project will generate a small amount of solid waste from maintenance, including broken or rusted metal, defective solar modules, electrical hardware, empty containers, and worker refuse. These will be collected, separated, and recycled where possible, with defective modules returned to the manufacturer. Hazardous materials and waste, such as used biodegradable dielectric fluid and mineral oil from transformers, are expected to be minimal and will be collected for off-site recycling without on-site storage. Any on-site pollutants will be properly contained and stored in compliance with local regulations. Additionally, a Spill Prevention Control and Countermeasure Plan (Mitigation Measure HYD-1) will be implemented to ensure proper containment and inspections to prevent oil and fuel spills.

Implementation of Mitigation Measure HYD-1 and adherence to local and state requirements will assure that operational impacts associated with water quality standards for the Solar Project are reduced to less than significant levels.

Residential GPA Impacts

Construction and Operation
The site is within the TPWD domestic water service boundaries. All water providers are required to comply with RWQCB standards for the protection of water quality and local aquifers. The City and RWQCB impose requirements for surface water protection, including the preparation of a site-specific SWPPP for surface waters.

The Project proposes a Residential GPA on 60 acres at the southwest corner of Noels Knoll and Samarkand that is currently designated Rural Living (RL-5) to Single Family Residential – 1 acre minimum (RS-1), which increases the residential density of the site. Development of the southern acreage is not proposed at this time; therefore, approval of the Residential GPA would not directly violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

The City, including the Project area, does not have a sanitary sewer system and currently operates with septic tanks and individual package treatment plants. Future development of the Residential GPA would require individual septic tanks or on-site package treatment plant(s). Effluent from future water treatment systems will be contained in closed systems and regulated by RWQCB permits, and is not expected to degrade groundwater quality. The RWQCB typically requires the effluent to meet concentration levels for certain parameters, which assures that any future treatment plant(s) operates properly to remove necessary pollutants and protects the surface waters and groundwater that receive the effluent.

Future development plans will also be required to comply with TPWD and NPDES regulations to minimize the pollutant load associated with construction. Meeting those standards requires the preparation and approval of a site-specific SWPPP, which must be approved by the City prior to the initiation of construction activities. The SWPPP will include BMPs that will protect surface waters from pollutants in storm flows during construction of the site. Disposal of domestic products, including grease and oil would be required to comply with County and RWQCB regulations. Adherence to local, state and federal requirements will assure that impacts associated with water quality standards for future development of the Residential GPA are 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?

Solar Project Impacts

TPWD's long-term water management planning ensures that adequate water supplies are available to meet existing and future water needs within its service area. TPWD's urban water deliveries in 2020 were 2,449 acre-feet (AF)[5], sourced from 100 percent groundwater, and the projected urban water demands for 2025 and 2045 are 3,048 AF and 3,660 AF, respectively[6]. TPWD maintains an existing and projected water supply of 6,995 AFY[7] through 2045, which is 191 percent of the District's projected water demand.

The Project would generate a marginal water demand during the construction phase, and operation and maintenance phase. Regarding on-going maintenance, the solar panels will be equipped with a waterless robotic system that periodically removes dust and debris. Water will only be used following a significant sandstorm. In such cases, a hauling truck will arrive on-site to pressure wash each panel. According to research by American Polywater on water usage for cleaning photovoltaic (PV) panels, approximately 3.5 liters of water are required to soak and rinse each panel.[8] For the proposed 160,000 panels and an estimated 3.5 liters per panel, the total water requirement per cleaning would be 560,000 liters, equivalent to 147,936 gallons, or 0.45 AF. For analysis purposes it is assumed that all panels would be cleaned once a year for an annual operational water demand of 0.45 AF. The solar Project's water demand of 0.45 AFY accounts for approximately 0.01 percent of the total planned increases in demand of 3,660 AFY by 2045.

The undeveloped Project site currently allows full groundwater recharge due to its pervious surface. The proposed solar facility will add impervious areas (solar panels and compacted roads), however the concrete foundations for inverters and transformers, and solar panels, which are mounted on steel posts with pervious gaps, would have a negligible impact on infiltration and will maintain impervious surfaces. The site will maintain stormwater sheet flow where feasible, allowing for on-site soil infiltration. Therefore, impacts to groundwater recharge will not be significantly impacted.

5 Table 2-1 Water Deliveries 2010, 2015, and 2020, TPWD 2020 UWMP, pg. 2-3.
6 Table 2-9 Total Projected Water Production (AF), TPWS 2020 UWMP, pg. 2-10.
7 Table 4-1 Available Water Supplies, TPWD 2020 UWMP, pg. 4-2.
8 Water Consumption in PV Panel Cleaning, American Polywater, accessed January 2025.

Residential GPA Impacts

The proposed Residential GPA would increase the density of the southern parcel from the currently allowable 71 units to a maximum of 119 units. Although no residential development is proposed as part of the Project, impacts from the addition of up to 48 housing units on the 60 acres south of Samarkand resulting from the Residential GPA constitutes a new impact and is therefore analyzed below.

During construction, water demand would be limited and temporary and used for dust control purposes, including the routine spraying of ground surfaces and construction equipment. During operation, water will be used for typical residential purposes: cooking, cleaning, and landscape irrigation.

The projected indoor residential usage for the Residential GPA is based on the residential indoor water use performance standards outlined in California Water Code (CWC) §10609.4 and uses the standard of 42 gallons per capita per day (gpcd) that takes effect in 2030. The occupants per home (2.47) is based on the California Department of Finance 2024 estimates for the City of Twentynine Palms.

Table 2.11-1
Residential GPA Projected Residential Water Demands

Scenario	Estimated Dwelling Units (EDU)	Occupants per Home[1]	Gallons per Day (gpd) per Occupant[2]	gpd/ EDU	Water Demand (gpd)	Water Demand (AFY)
Maximum Buildout (Gross)	119	2.47	42	103.74	12,345.1	13.8

[1] CA Department of Finance Table 2: E-5 City/County Population and Housing Estimates, 1/1/24 for the City of Twentynine Palms.
[2] CA Indoor Water Use Performance Standard. Assumes future buildout post 2030.

It is important to note that the Residential GPA results in the same number of units as currently planned in the General Plan – the 48 units lost from the Solar Project would be constructed instead on the Residential GPA parcel. Therefore, the Residential GPA does not result in a cumulative increase in water demand, but rather relocates demand to the 60 acres south of the Solar Project.

The undeveloped site currently allows full groundwater recharge due to its pervious surface. Future residential development will add impervious areas (housing, driveways, paved roadways) however the site will maintain stormwater sheet flow where feasible, allowing for on-site soil infiltration. Also, the City requires that all development projects prepare a drainage study demonstrating on-site retention basins are designed to retain, at a minimum, the incremental increase in storm water runoff volume, which would also allow for soil infiltration. Therefore, impacts to groundwater recharge will be less than significant.

Conclusion

At General Plan build out, the proposed Project (including the solar field and Residential GPA) has an estimated annual water demand of 0.45 AF from the Solar Project, and 13.8 AF from the Residential GPA. This water demand represents approximately 0.02 percent of TPWD's total planned increases in demand of 3,660 AFY by 2045. According to the TPWD 2020 UWMP, the District maintains an existing and projected annual water supply of 6,995 AF through 2045, which is an excess supply of 3,335 AF when compared to demand. The Project's water demand increase represents less than 1 percent of TPWD projected excess available water supply through 2045.

The Project site will maintain stormwater sheet flow where feasible, allowing for on-site soil infiltration and groundwater recharge.

Therefore, given the Project's annual water use and minimal disruption of on-site soil water infiltration, the Project will not substantially decrease groundwater supplies or interfere substantially with groundwater recharge, and will not impede sustainable groundwater management of the basin. Impacts will 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 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 off-site;

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?

Solar Project Impacts

The site's hydrology includes ephemeral channel features associated with alluvial fans, which can change course based on storm strength, soil displacement and wind direction. According to the Preliminary Drainage Study (Appendix H.1), the Project site primarily drains to four small watersheds (Basins 1 through 4) with ephemeral drainage features originating just south of the southern Solar Project

boundary. Flow generated within these four basins is either captured in discontinuous channels and percolated into local soils, or flows into the east-west trending ephemeral drainage located in the northwest corner of the site (Basin 5). The drainage study calculated peak flows for these five basins (see Exhibit 2.11-3 Project Basins) as part of the hydrology analysis.

According to the Hydrology and Hydraulic Technical Study (Appendix H.2), flow generated from the 100-year 24-hour storm is conveyed to three ephemeral drainages that maintain continuous channel features (i.e., bed and banks) through the Solar Project site in Basin 1 (northeast corner), Basin 3 (middle of project site), and Basin 5 (large ephemeral stream in northwest corner).

The Solar Project includes a 20-foot-wide compacted gravel access road from the south edge of the Solar Project to Two Mile Road and multiple 10-foot wide interior maintenance access roads, totaling 9.6 acres. Steel bridges (20-40 feet wide) are proposed as part of the Solar Project, as described in Section 1, Project Description, and will maintain natural stream flow. The Project Preliminary Drainage Study determined preliminary Project design preserves these conditions by placing solar facilities and infrastructure outside ephemeral streams, avoiding disturbance to mapped aquatic resources and a 20-foot buffer zone. Please also see Section 2.5, Biological Resources, for a complete discussion of impacts to jurisdictional waters.

The Hydrology and Hydraulic Technical Study (Appendix H.2) calculated pre- and post-Project peak discharge for the 10-year and 100-year rainfall events for each of the 5 Basins in order to evaluate flood inundation, depth, and velocity across the Project site. Under existing and proposed conditions, flow magnitude and flood depths in the largest basin (Basin 5 – northwest corner) will remain unchanged. The maximum peak flow in Basin 5 for the 100-year, 24-hour storm is 16,230 cubic feet per second (cfs), with a flood depth of up to 6 feet and flow velocities up to 10 fps.

Basins 1 through 4 are much smaller, and had modeled maximum peak flows for the 100-year 24-hour event ranging from 105 to 888 cfs, with flood depths below 1 foot and velocities below 6 fps. Proposed Project components (e.g., grading and facilities) increased maximum peak flows by less than 0.2% in all 4 basins (tenths of cfs), and only partially increased flood depth in one small section of the ephemeral channel in Basin 3 (up to 2 feet deep), but maintained the mostly <1-foot flooding through the Project site to the confluence with the main ephemeral channel (Basin 5). Based on these results, the Hydrology and Hydraulics study concluded that the anticipated shifts in hydrology are minimal.

A scour analysis was also conducted as part of the Hydrology and Hydraulic Technical Study to evaluate erosion potential around proposed bridge abutments and solar arrays. Scour refers to the erosion of sediment, like sand and gravel, around structures due to water flow. Results of the analysis show no scour would occur around proposed bridge abutments due to the presence of older and more stable alluvium at these locations, and as they will be located outside of the 100-year, 24-hour inundation areas. However, scour potential for the solar arrays can be expected to reach a maximum of 1-foot in some locations for the 100-year, 24-hour storm.

Prior to finalizing the hydrologic design and engineering plans for Solar Project stormwater improvements, construction plans must be reviewed and approved by City Engineer to ensure that these improvements do not interfere with or adversely affect local groundwater or drainage facilities. The City will require a Final Drainage Study prior to issuance of grading permits, demonstrating Project design preserves the drainages' natural flow patterns, and minimizes scour within the project site (which would result in increased sediment transport downstream).

Implementation of City required BMPs in the SWPPP will reduce pollutants of concern that may enter nearby receiving waters and help reduce short and long-term water quality impacts caused by the construction and operation of the proposed Project. The minimal increase in impervious surfaces is expected to have negligible effects on runoff, erosion, and siltation, resulting in a less than significant impact on surface hydrology, including flooding.

Residential GPA Impacts

Because the Project does not propose development plans for the southern acreage at this time, a site-specific drainage study has not been conducted to determine the extent of soil runoff on- or off-site because of flooding. However, the City requires all development projects prepare a hydrology study in conjunction with entitlements to ensure site drainage is designed to reduce potential impacts from flooding. The hydrology study must demonstrate that the project proposed can contain the 100 year storm on site through retention, detention or other means; that it manages off-site flows through the site where necessary, and assures that these flows, when exiting the site, do so in a manner consistent with pre-development conditions; and includes measures which assure that surface waters are not impacted by silt or erosion. These standard requirements assure that impacts associated with drainage patterns, siltation and erosion, and off-site flooding remain less than significant.

In addition, implementation of City required BMPs will reduce pollutants of concern that may enter nearby receiving waters and help reduce short and long-term water quality impacts caused by the construction and operation of the homes. Approval of the SWPPP and the required BMPs will reduce impacts to surface waters by reducing erosion, siltation, and eliminating pollutants in storm flows. With the implementation of this standard requirement, the impacts to downstream water bodies associated with surface water pollution will be less than significant.

2.11.7 Mitigation Measures

The following measure is set forth to ensure that project impacts relating to water quality are below levels of significance.

HYD-1 Spill Prevention, Control, and Countermeasure Plan (SPCCP)
The Applicant shall prepare a Spill Prevention, Control, and Countermeasure Plan (SPCCP) that shall clearly state measures to stop the source of a spill, contain the spill, clean up the spill, dispose of contaminated materials, and train personnel to prevent and control future spills. The SPCCP shall identify sources of oil or hazardous wastes that may be stored or used on site. If oil or hazardous wastes would be stored on site during operations, the SPCCP shall identify the location of storage, anticipated volumes of materials to be stored, method of storage, and countermeasures to address potential spill or accidental release of materials. In addition, the SPCCP shall include step-by-step instructions for the response to spills at a facility. In addition, the spill response plan should:

- Identify individuals responsible for implementing the plan
- Define safety measures to be taken with each kind of waste
- Specify how to notify appropriate authorities, such as police and fire departments, hospitals, or municipal sewage treatment facilities for assistance
- State procedures for containing, diverting, isolating, and cleaning up the spill
- Describe spill response equipment to be used, including safety and cleanup equipment

The SPCCP shall be submitted to San Bernardino County Public Works – Environmental Management Division for review and approval prior to occupation/operations and shall be maintained over the operational life of the Project.

2.11.8 Significance After Mitigation

Implementation of Mitigation Measure HYD-1 will prevent and control potential impacts to water quality through spill prevention measures. Surface and groundwater quality will not be significantly impacted by the Project and the minimal increase in impervious surfaces is expected to have negligible effects on runoff, erosion, and siltation, resulting in a less-than-significant impact on surface hydrology. At General Plan build out, the Solar Project and Residential GPA will result in a net water demand increase of 6.05 AF, which represents less than 1 percent of TPWD's projected excess available water supply through 2045 for a less than significant impact to regional water supplies. The Project will not alter any local or regional drainage pattern or contribute runoff to existing and planned drainage facilities, nor will it contribute to erosion or siltation. Therefore, with implementation of standard local, state and federal regulations, and with application of the above mitigation measure, potential impacts to hydrology and water quality and supplies will be less than significant.

2.11.9 Cumulative Impacts

Project cumulative impacts are expected to be limited. The Project will not contribute to water quality degradation and will result in a minimal net water demand compared to current conditions. The Project will have no effect on local or area-wide drainage facilities and will not require capacity from any existing or future off-site drainage facility. The Project will not have a cumulatively considerable impact on area drainage or local or regional water quality or supplies.

2.12 Land Use and Planning

2.12.1 Introduction

The Land Use and Planning section describes the existing and proposed land uses of the Project site and surrounding land uses. Potential Project impacts on these lands are analyzed in terms of consistency with the City of Twentynine Palms General Plan 2012 and other land use planning documents. Land use regulations affecting the Project site are described, as are the Project's appropriateness, suitability, and compatibility with existing and planned land uses in the vicinity.

The Solar Project requires General Plan and Zoning text and map amendments to create a new Renewable Energy land use designation and zone in the City. The proposed Project also includes a Residential GPA to increase the density of permitted single-family housing on 60 acres of land within the southern half of the Project area, from the current RL-5, one unit per 5 acres, to RS-1, one unit per acre. The Residential GPA is required to offset the loss of 48 residential units created by the use of residential land for the Solar Project. These land use changes are analyzed below.

2.12.2 Thresholds of Significance

The thresholds of significance analyzed herein have been taken from Appendix G of the State CEQA Guidelines. For purposes of this EIR, the proposed Project would have a significant effect on existing and planned land use if it were to:

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.

The Initial Study determined that the Project would result in "No Impact' for threshold question a) above. Therefore, it is not analyzed further in this EIR. Please see Appendix A.

2.12.3 Regulatory Framework

Federal

There are no federal regulations that affect land use for this Project.

State

California Government Code, §65300 et seq
Government Code 65300 et seq establishes the authority of planning agencies for county and city jurisdictions to prepare comprehensive, long-term general plans that guide the physical development of land within their planning area boundaries. The legislative body of each jurisdiction must adopt a general plan including the mandatory elements required in Section 65302.

California Government Code, §65800 et seq
Code 65800 et seq establishes the authority for counties and cities to implement their general plans via the adoption and administration of zoning laws, ordinances, rules, and regulations which define allowable land uses within all zone districts. Zone districts must be consistent with the general plan land uses.

California Government Code, §53091(d)(e)
The Section of Government Code applies directly to electrical energy:

(d) "Building ordinances of county or city jurisdiction shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency."

(e) "Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, or for the production or generation of electrical energy, facilities that are subject to Section 12808.5 of the Public Utilities Code, or electrical substations in an electrical transmission system that receives electricity at less than 100,000 volts. Zoning ordinances of a county or city shall apply to the location or construction of facilities for the storage or transmission of electrical energy by a local agency, if the zoning ordinances make provision for those facilities."

Senate Bill 330, Housing Crisis Act of 2019
Codified in Section 65941.1 of the California Government Code, Senate Bill 330 (SB 330) prohibits local governments from reducing housing density and, in turn, reducing housing capacity in response to California's housing shortage. The legislation introduces a "no net loss" standard which requires cities and counties to avoid downzoning a residential parcel without first identifying a region within their boundaries where the residential units could be accommodated. Essentially, the no net loss standard ensures no local jurisdiction passes a zoning change or other policy which would reduce projected residential capacity without identifying other parcel(s) to offset the loss, ensuring no overall reduction in housing capacity.

California Public Utilities Commission

The California Public Utilities Commission's (CPUC) review of transmission line applications occurs under two concurrent and parallel processes: (1) environmental review pursuant to CEQA; and (2) review of project needs and costs pursuant to Public Utilities Code Section 1001 et seq. and General Order 131-D.

CPUC General Order 131-D, Rules relating to the planning and construction of electric generation, transmission/power/distribution line facilities, and substations located in California, states that no electric public utilities will begin construction in the state of any new electric generating plant, or of the modification, alteration, or addition to an existing electric generating plant, or of electric transmission/power/distribution line facilities, or of new, upgraded, or modified substations, exceeding 50 kilovolts (kV), without first complying with the provisions of the General Order. For the purposes of the General Order, a transmission line is a line designated to operate at or above 200 kV. A power line is a line designated to operate between 50 and 200 kV. A distribution line is a line designated to operate under 50 kV.

Pursuant to the California Constitution Article XII, Section 8, as enacted through California Public Utilities Code (PUC) Section 1001, the CPUC has sole and exclusive jurisdiction over the siting and design of SCE transmission facilities. CPUC General Order No. 131-D, Section XIV.B. makes clear that "Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC's jurisdiction. However, in locating such projects, the public utilities are directed to consider local regulations and consult with local agencies regarding land use matters."

Local

City of Twentynine Palms General Plan 2012

The City's 2012 General Plan establishes the community's long-range vision for the City's physical development. The General Plan designates land uses for territory within the City's boundary, provides maps, and defines goals and policies for implementing the vision. The following goals and policies apply to this section of the EIR.

Goal LU-1 Encourage orderly growth and development as envisioned by community residents.

Policy LU-1.1 Build-out of the City, as planned and envisioned by the General Plan, shall be guided by the Land Use Map. Density of residential land uses shall be calculated on the basis on gross acreage. For the purposes of residential density calculations, the lot area shall include easements and dedications for public rights-of-way, such as streets, roads, alleys, sidewalks, trails, and flood control channels. Typically, this would include the area to the centerline of the dedication or easement, if it is split between two parcels, unless the easement or dedication is contained within one property or is demonstrated to be otherwise split between parcels.

Policy LU-1.5 General Plan Amendments shall only be approved if they can demonstrate that the proposed amendment will not adversely impact the existing community and the amendment will help achieve the vision and goals established by the General Plan.

Policy LU-1.6 A General Plan Amendment dealing with a change in land use designation shall ensure the gross area included in the proposed change complies with the minimum district requirements shown in Table LU-5. Changes which propose to increase or decrease the size of existing, established Land Use Districts may be approved provided that the resulting Land Use Districts are not smaller than the Minimum Contiguous Land Area specified in the General Plan.

Policy LU-1.7 "Spot zoning" shall be prohibited and all land use requests shall meet the minimum contiguous land area specified in Table LU-5.

Policy LU-1.8 Following the adoption of a General Plan Amendment, the Land Use Map shall be updated to ensure that it accurately reflects the City's land use policy.

Policy LU-1.10 The City's Development Code, composed of the Zoning and Subdivision Ordinances, shall be consistent with the General Plan.

Goal LU-2 Protect existing neighborhoods and the area's natural surroundings by encouraging development that is compatible with the City's small-town character.

Policy LU-2.1 Development shall be consistent with underlying land use densities and intensities.

Policy LU 2.2 Land Use applications requesting higher or lower densities/intensities than permitted by the underlying land use designation shall be required to process a General Plan Amendment as outlined by the "Land Use Map and Land Use Distribution Section" of the General Plan and the City's Development Code.

Policy LU-2.3 Require that new development be sensitive to neighborhood context and development scale.

Goal LU-3 Promote a high quality of life by encouraging attractive high quality development that is compatible with existing uses and the City's desert environment.

Policy LU-3.1 Encourage high quality attractive residential neighborhoods, economically viable and attractive commercial and industrial areas, and high-quality public uses.

Policy LU-3.3 Provide opportunities for a variety of residential densities to accommodate rural and suburban lifestyles, and housing types for all economic and demographic segments of the City's population, with convenient access to public facilities, employment and shopping.

Policy LU-3.5 Ensure that the provision of housing is consistent with the goals and policies contained in the Housing Element.

Policy LU-4.1 Consider and address the potential impacts of new development on surrounding properties.

Goal LU-6 Promote development of a well-balanced community that can adequately meet the needs of future residents and promotes economic development.

Policy LU-6.1 Promote orderly growth and development through smart growth and planning principles.

Goal LU-7 Protect and preserve Twentynine Palms natural resources, promote the existing quality of life and prepare for future residents and businesses by promoting superior sustainable development.

Policy LU-7.1 New development shall be designed in a manner that sound land use, transportation and economic development policies are implemented.

Policy LU-7.2 Development shall be sustainable in its use of land and shall limit impacts to natural resources, energy, and air and water quality.

Policy LU-7.5 Allow clustering of residential development in sensitive areas of the City to protect and preserve the area's natural resources for future generations.

Policy LU-10.1 Encourage land use decisions that are fiscally responsible and positively affect the City's economic health by creating jobs, generating tax revenue and involving private capital investment.

Policy LU-10.8 Maintain a strong economic base by targeting and attracting new uses that provide high quality development and meet important economic goals such as employment and revenue generation.

Goal CO-4 Develop regulations and policies which reduce pollutants responsible for lowering the air quality within the City and for adding to the global climate change problem.

Policy CO-4.14 Ensure the use of alternative and/or renewable energy sources for all new City facilities. Where and when feasible and practical, retrofit existing City facilities for the use of alternative and/or renewable energy.

Goal CO-7 Develop regulations and programs to encourages sustainable practices in land use, use of buildings and for development and construction.

Policy CO-7.4 Develop provisions within the development and building codes to encourage and allow alternative energy facilities and equipment to be installed and developed on individual properties to serve that property.

Goal HS-2 Promote and encourage housing development that adequately meets the needs of all socioeconomic segments of the community.

Policy HS-2.7 Provide adequate sites for the development of new housing through appropriate land use and zoning designations to accommodate the City's share of regional housing needs.

City of Twentynine Palms Development Code

The City's Development Code (Chapter 19) protects and promotes the health, safety and welfare of Twentynine Palms residents through the establishment of standards that define the uses and locations of structures, services, and infrastructure throughout the City's planning area.

Chapter 19.46 Zone Change and Development Code Amendment

This code describes procedures for review of Zone Changes and Development Code Amendments which include amendments to and deletions from the Development Code text and exhibits.

Chapter 19.50 General Plan Amendment

This code describes the guidelines and procedures for amending the Plan. The General Plan and amendment procedures must be consistent with state planning laws (Government Code §65300 et seq.) and state General Plan Guidelines.

2.12.4 Environmental Setting

The City of Twentynine Palms encompasses 58.8 square miles in addition to a 30.5-square-mile Sphere of Influence (SOI) in the eastern Morongo Basin. Two major landmarks that draw people and economic activity to the City include Joshua Tree National Park along the City's southern boundary and the MCAGCC sited at the City's northeast corner, with the populated "Mainside" area of the facility located within the City's limits. Characterized by its rural/semirural setting, weather, clean air and vistas, the City's General Plan aims to protect the area's unique natural resources and support long-term economic growth.

The General Plan is a living document, routinely edited and updated to best reflect the needs of the growing community and establish development goals and policies aimed at creating a path for implementation. The General Plan was comprehensively updated in April 2012, and has been subject to site- and project-specific amendments since that time. The General Plan consists of eight elements, each with a narrow focus on a subject governing future development:

- Land Use Element
- Circulation Element
- Housing Element
- Safety Element

- Conservation and Open Space Element
- Recreation Element
- Equity and Social Justice for the City General Plan
- Noise Element

Of all the General Plan elements, the effects of the Land Use Element are the most direct and consequential. The purpose of the Land Use Element is to reflect the City's vision of physical development through land use policies aimed at promoting the strength of the local economy, encouraging high quality development, and preserving the natural character through sustainable and equitable growth principles. The General Plan Land Use Map visually represents the planned distribution of land uses at a citywide scale. These proposed land uses double as zoning districts, given that the City operates under a one-map land use/zoning system. Within the General Plan Land Use Map (Exhibit LU-3 of the General Plan), a variety of land uses are permitted including residential, commercial, industrial, public, and others (tribal land and floodway).

The City allows for these land use designations/zoning districts to be amended so long as the request meets the minimum acreage requirement for a GPA as noted in Table LU-5 of the General Plan (Policy LU-1.6). The requirement is intended to help manage and avoid "spot zoning". Spot zoning is defined as the zoning of an isolated parcel in a manner which is inconsistent or incompatible with surrounding districts (Policy LU-1.7). Changes in the distribution of land uses are allowed, as described in Policy LU-1.5, if the amendment "will not adversely impact the existing community and the amendment will help achieve the vision and goals established by the General Plan."

2.12.5 Existing Conditions

Located in the isolated and rural northwest quadrant of Twentynine Palms, the Project's 477± acres are undeveloped and unoccupied. According to historical aerial images accessed through Google Earth Pro Version 7.3, no development has occurred on the property since at least 1994. During this period, the property has been relatively undisturbed and comprised of loose sedimentary soil, sparse desert shrubs, drainage channels caused by natural ephemeral water flows, and moderate slopes. Land immediately adjacent to the property to the north, west and east is also undeveloped and in its natural state. Land south of the Project site and across Two Mile Road is partially developed with scattered single family homes and the Carodean substation, located south of the southwest corner of the Project site. There is a commercial solar facility located approximately 2 miles northwest of the Project site, on the west side of Lear Avenue, on unincorporated County land; and another 2.25 miles northeast, consisting of about 80± acres of solar panels, also on unincorporated County land.

Historic Development Pattern

Urban development in proximity to the Project began prior to 1994 with signs of residential development occurring on the south side of Two Mile Road and east side of Sunrise Road. The Twentynine Palms Public Cemetery also appears at this time. From 1994 to 2005, there are no aerial images available to show the gradual progression of development within the area. By December 2005, there appears to have been greater residential developments on the south side of Two Mile Road, as well as other nonresidential development, including the Desert Congregational Church on the northwest corner of Two Mile Road and Sunrise Road, and the Carodean substation. By June 2009, the Twentynine Palms Water District (TPWD) aboveground water reservoir is visible near the southeast corner of Sunrise Road and Samarkand Drive, east of the Project site. By May 2012, the unmarked and unpaved segment of Samarkand Drive between Sunrise Road and Shoshone Valley Road, abutting the Solar Project site to the south and bisecting the Project site first appears. Images from 2012 to 2023 (last year recorded) show no noticeable changes or signs of further development within the Project's vicinity. The Project site and surrounding urban environment have not drastically changed since 2012, with the area consisting primarily of undeveloped parcels and rural residential development.

Aerial images show the solar facility on the southwest corner of Lear Avenue and Cove View Road in May 2012. By March 2013, further development of the facility had occurred. At this time, the second solar facility was constructed at the northwest corner of Indian Trail and Morongo Road. Implementation of these two solar facilities was permitted subject to County standards.

General Plan and Zoning

According to the City General Plan Land Use map, the Project area is planned primarily as a residential district, including Single-Family Residential Estate (RS-E) on the south side of Two Mile Road, as well as Rural Living-5 (RL-5), Single-Family Residential (RS-1), Single-Family Residential Estate, and Public (P) on the east side of Sunrise Road. Similarly, the Project parcel is designated/zoned for residential use.

Table 2.4-1 details land use designation and permitted development on the Project 477± acre area, pursuant to the City General Plan Land Use Element.

Table 2.12-1
Existing General Land Use and Zoning Plan Designations on the Project Area

Land Use Designation	Description
Rural Living (RL-5)	RL-5 is intended for quiet and spacious single-family residential use with some area of compatible institutional uses. The rural setting allows for more relaxed development standards. At minimum, RL-5 requires a lot size of five acres.
Single-Family Residential Estate (RS-E)	RS-E is intended for the development of very low-density single-family residences. Development is characterized generally by detached homes on larger individual lots within a custom character of development. A minimum lot size is 2.5 acres.
Source: City of Twentynine Palms 2012 General Plan, April 2012.	

Implementation of a commercial solar facility on the Project's northerly 184± acres is not permitted under current General Plan and zoning designations. Nor is there an existing land use which would allow for a commercial solar facility to be implemented.

Under Development Code Article 2 (Land Use/Zoning Districts), noncommercial renewable energy sources including windmills and solar energy collectors are allowed under all residential land uses including RL-5 and RS-E, in accordance with Title 24 of the California Energy Code. This provision specifically targets residential development to offset a percentage of their energy demand with an independent source of electricity generated by a renewable resource. However, this allowance is limited to noncommercial solar production. There is no existing zone which would align with the proposed development.

Given the current restrictions, the Project proposes a GPA to create a new Renewable Energy (E) land use designation which would allow commercial renewable energy facilities to operate in Twentynine Palms. The GPA would also modify the land use map for the northern 241± acres of the site from RL-5 to E. In addition, a Residential GPA would increase the allowed residential density capacity of the 60 acres at the southwest corner of Noels Knoll and Samarkand from RL-5 to RS-1 to ensure no net loss, consistent with SB 330, in regard to the 48 residential units displaced by the northern parcel's land use redesignation. Consistent with the requirements of Government Code, parallel Zoning text and map amendments are proposed to add a Renewable Energy (E) zone, and place the E zone designation on the northern 241 acres.

2.12.6 Project Impacts

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.

The Solar Project's proposal for a commercial solar facility is currently not a permitted land use under the City's 2012 General Plan. Table LU-7 of the General Plan Land Use Element lists all 23 permitted land uses by category, none of which permit or conditionally permit a commercial renewable energy facility. However, the General Plan is a living policy document that is updated to reflect evolving needs of the City.

A second GPA, the Residential GPA, is required to assure that the Solar Project is consistent with SB 330, and that there is no net loss in residential units if the Solar Project GPA is approved. The Residential GPA would offset the loss by changing the 60 acres of RL-5 land located at the southwest corner of Noels Knoll and Samarkand to RS-1. With implementation of the Residential GPA, the Solar Project would result in no net loss of residential units in the City.

Amendments to the General Plan, including the General Plan Land Use map, are allowed so long as changes are consistent with the General Plan policies, minimum acreage requirement for a GPA and provisions established in Chapter 19.50 (General Plan Amendment) of the City Municipal Code.

Chapter 19.50 outlines the City systemic procedure in addressing GPA proposals. Standards in this chapter establish responsibilities between the City Planning Commission and the City Council to hold public hearings prior to any action taken in regards to a GPA application. Additionally, it grants power to the City Council to approve, modify, or deny a GPA application. All approving authorities must verify the proposed GPA application fulfills the criteria as mandated by Development Code Section 19.50.070 (Findings of Approval). Four criteria are identified:

(1) That the proposed GPA will not adversely impact the existing community
(2) That the proposed GPA is consistent with the intent of the vision, goals, and policies of the General Plan as a whole
(3) That the proposed GPA prescribes reasonable controls and standards for affected land uses to ensure compatibility and integrity of those uses with other established uses
(4) That the proposed GPA provides for the protection of the general health safety and/or welfare of the community

The proposed GPAs are evaluated against the four criteria to assess their potential for land use impacts.

(1) That the proposed GPA will not adversely impact the existing community

Solar Project Impacts

As noted above, the Solar Project site is relatively isolated from nearby development. With the nearest existing community being a widely spaced residential neighborhood on the east side of Sunrise Road, the closest residential unit is approximately 1,500 feet from the site's eastern boundary. To the south, and across Two Mile Road, residential development occurs at a distance of about 2,760± feet.

In accordance with CEQA Guidelines Section 15065(a), this EIR discloses all potential environmental effects associated with construction and operation of the Solar Project, including direct, indirect, and cumulative impacts. Any changes to the physical environment which could cause or increase adverse effects on the existing built environment, specifically causing significant impacts to humans are addressed as mandated by CEQA Guidelines Section 15065(a)(4). All impacts categorized as significant are minimized with actionable and feasible mitigation measures, with the exception of impacts to visual character, as described in Section 2.3. For all other environmental impacts, mitigation measures are supported by substantial evidence and shown to reduce significant impacts to the specified performance standard of "less than significant". The Solar Project will be subject to these mitigation measures so as to ensure potential adverse effects to the existing neighboring residential community, as well as Twentynine Palms as a whole, do not significantly impact the community.

The City Council will determine, as allowed under CEQA Section 15091, whether the benefits of the Solar Project outweigh its impacts to visual character in this part of the City. However, as it relates to impacts to the existing community of scattered residential units currently existing 1,500 to 2,700 feet from the Solar Project site, impacts will be less than significant with the mitigation measures included in this EIR.

Residential GPA Impacts

The Project's proposed Residential GPA has been analyzed throughout this EIR. The Residential GPA in and of itself will not cause significant environmental impacts. The Residential GPA is therefore evaluated as a future residential project with a total of 119 single-family residential units and supporting infrastructure at

buildout. The Residential GPA does not increase overall density in the City, but rather transfers 48 units to 60 acres at the southwest corner of Noels Knoll and Samarkand. Although this will result in more dense development on the 60 acres, it will not impact the existing residential communities to the east and south, insofar as it will provide for residential units in an area currently proposed for residential units. Residential communities to the east and south include areas already built at similar densities within RS-1 zoned areas.

Potential adverse effects related to the Residential GPA are addressed in all areas of focus listed above and analyzed for direct, indirect, and cumulative impacts in accordance with CEQA Guidelines. Any future residential development would be required to comply with the mitigation measures imposed herein as well as any future project-specific measures provided by subsequent CEQA analysis when residential projects are proposed. As such, the Residential GPA to increase the southern parcel's density would not have significant adverse effects to the existing community as required by CEQA. All adverse effects will be mitigated to less than significant levels.

(2) That the proposed GPA is consistent with the intent of the vision, goals, and policies of the General Plan as a whole

Solar Project Impacts

The Land Use Element provides specific guidance relating to changes in the General Plan, including:

Policy LU-1.5 General Plan Amendments shall only be approved if they can demonstrate that the proposed amendment will not adversely impact the existing community and the amendment will help achieve the vision and goals established by the General Plan.

Policy LU-2.3 Require that new development be sensitive to neighborhood context and development scale.

Policy LU-4.1 Consider and address the potential impacts of new development on surrounding properties.

Goal LU-6 Promote development of a well-balanced community that can adequately meet the needs of future residents and promotes economic development.

Policy LU-7.2 Development shall be sustainable in its use of land and shall limit impacts to natural resources, energy, and air and water quality.

The proposed GPA for the Solar Project will not adversely impact the existing community, as described above, insofar as existing development occurs at a distance of 1,500 to 2,700 feet from the proposed Project, and mitigation measures included in this EIR reduce the impacts of the Solar Project to less than significant levels. In addition, consistent with Policy LU-2.3 and Goal LU-6, the Solar project will result in low-rise solar racks that will not impede the vistas of surrounding mountains, and will be less high than existing home heights. Furthermore, the development of alternative energy within the City will reduce the City's and the region's dependence on fossil fuel generated power, and reduce GHG emissions regionally.

Development of a solar facility in Twentynine Palms also aligns with goals and policies outlined in the City General Plan, Conservation and Open Space Element which address the City's decision to incorporate renewable energy sources to power existing and future development.

Goal CO-4 Develop regulations and policies which reduce pollutants responsible for lowering the air quality within the City and for adding to the global climate change problem.

Policy CO-4.14 Ensure the use of alternative and/or renewable energy sources for all new City facilities. Where and when feasible and practical, retrofit existing City facilities for the use of alternative and/or renewable energy.

The proposed Solar Project is designed to generate electricity at a maximum rate of 93.5 GWh during the daytime, which is sufficient energy to power approximately 8,000 households. The solar energy produced at the facility will be routed through underground cables to the Carodean Substation, owned and managed by SCE, and integrated into its grid to serve all customers, including those in the City of Twentynine Palms. The use of renewable energy produced by the facility would assist in the City's initiative to adopt alternative energy sources so as to limit the environmental impacts related to the use of coal and natural gas (nonrenewable energy sources) in the energy sector which has contributed to climate change impacts. Adoption of the proposed GPA, and implementation of the Solar Project would therefore aid in the City's implementation of greenhouse gas reductions.

In the regional Greenhouse Gas Reduction Plan, the City established a goal to reduce GHG emissions to below 46% from its 2008 GHG emission levels by 2030. Local reduction measures designed by the City to meet this goal include the incorporation of alternative energy sources to power existing housing and buildings. The Solar Project would facilitate the transition to renewable energy, as well as help the City achieve its 2030 GHG reduction goal. As such, the proposed GPA for the Solar Project would be consistent with the vision, goals, and policies in the City General Plan, as well as the City and County Greenhouse Gas Reduction Plan, and impacts would be less than significant.

Residential GPA Impacts

The southern 236-acre parcel is currently designated for residential use. The proposed land use change would remain consistent with the City's determination for residential development in this area, but at a higher density than currently intended on 60 of the 236 acres.

The Project's Residential GPA would accommodate the 48 residential units lost from rezoning the northern parcel. The land use change to RS-1 would allow for a total of 119 residential units on the southern parcel, consistent with the currently allowed potential units on all 477± acres. Adoption of the proposed Residential GPA would therefore allow for the City to remain consistent with SB 330. Additionally, the land use change would implement and thus be consistent with the following City General Plan goals and policies.

Goal LU-3 Promote a high quality of life by encouraging attractive high quality development that is compatible with existing uses and the City's desert environment

Policy LU-3.3 Provide opportunities for a variety of residential densities to accommodate rural and suburban lifestyles, and housing types for all economic and demographic segments of the City's population, with convenient access to public facilities, employment of any available assistance programs.

Policy LU-3.5 Ensure that the provision of housing is consistent with the goals and policies contained in the Housing Element.

Goal HS-2 Promote and encourage housing development that adequately meets the needs of all socioeconomic segments of the community.

Policy HS-2.7 Provide adequate sites for the development of new housing through appropriate land use and zoning designations to accommodate the City's share of regional housing needs.

No formal development has been proposed on any part of the southern parcel, including the 60 acres on which the GPA is proposed. However, future residential development within Twentynine Palms' northwest region would be compatible with the existing built environment, which primarily consists of single family residential units within a rural setting which incorporates the City's natural desert character. The increased density on the 60 acres would result in a marginally greater number of housing units, but would be the same as the number of housing units currently allowed on the 477± acre Project site. Densities of one unit to the acre are currently allowed on the east side of Sunrise Road, east and south of the Project site. The Residential GPA would also expand the type of residential lots and future homes in the City, and implement Housing Element goals regarding providing a variety of densities for future development.

Any future residential project would be required to adhere to the City's development standards that establish limits on building heights, minimum building separation and lot coverage. As such, future residential development on the southern parcel would adhere to all applicable policies, plans, and ordinance codes mandated by the City, as required by law. Impacts would be less than significant.

(3) That the proposed GPA prescribes reasonable controls and standards for affected land uses to ensure compatibility and integrity of those uses with other established uses

Solar Project Impacts

The Solar Project also requires approval of a Development Code Amendment to codify the new permitted land use and establish allowable uses and development standards in an E zone. As shown in Appendix J, General Plan and Zoning Text, zoning development standards such as setback, glare, and night lighting, as well as public safety services impact fees, use permits, fencing standards, and decommission requirements are all provided in the text. These and other standards would be established under the new E zone, which would provide the City with reasonable controls and standards to ensure compatibility and integrity with established land uses within the planning area. Impacts would be less than significant.

Residential GPA Impacts

Future buildout of the 60 acres of RS-1 land in the southern parcel for residential use would be required to comply with allowed uses and development standards for the RS-1 zone. Codified in Article 2, Chapter 19.10 (Single-Family Residential District), the Development Code implements land use specific standards for RS uses including RS-1. Table 19.10.030-1, which lists permitted land uses and permit requirements for a RS-1 designated property and Table 19.10.040-1, which lists development standards for the land use zone. Compliance to these established standards by future development would ensure the project's consistency with other RS-1 development and compatibility with development in the vicinity. The controls would be consistent with residential neighborhoods in the vicinity and throughout the City, and impacts would be less than significant.

(4) That the proposed GPA provides for the protection of the general health safety and/or welfare of the community

Solar Project Impacts

The Solar Project's proposal for a GPA on the north parcel would introduce a new land use designation and zoning district into the community. The impacts associated with public health and safety in the community have been analyzed throughout this EIR, and have been found to be less than significant for the following environmental issue areas:

- Air Quality
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise

These EIR sections have thoroughly assessed the Solar Project's potential to cause adverse effects on local receptors. With the implementation of strict state, regional, and local standards governing air quality, geological hazards, hazardous materials, and ambient noise, which the development would be required to meet, impacts identified in all of these sections will be less than significant. The Solar Project's potential for health and safety impacts is reduced by its location within an undeveloped and isolated region of Twentynine Palms, and its self-contained and autonomous nature. Therefore, with compliance with state, regional, and local standards, the proposed GPA would cause less than significant impacts to the general health safety and welfare of the community at large.

Residential GPA Impacts

No development has been formally proposed on the southern parcel. Nonetheless, future residential development would be required to comply with the most current standards established by California Building Code, MDAQMD, and zoning development standards. In conformance with these standards, future buildout of the 60 acres of RS-1 land would not cause significant risk to human health and welfare. As such, impacts would be less than significant.

2.12.7 Mitigation Measures

As described above, upon adoption of the GPAs and zone changes, impacts associated with consistency with General Plan and zoning standards would be less than significant, and no mitigation measures are required.

2.12.8 Significance After Mitigation

Potential impacts from the Project's proposed General Plan and zoning amendments are less than significant.

2.12.9 Cumulative Impacts

The probability for cumulative considerable impacts would occur if the Project, in combination with existing or future development, were to conflict with the General Plan or local standards and thus collectively cause significant environmental impacts. The creation of the Renewable Energy land use and zoning designation will result in less than significant project impacts on land use and planning. Should the land use and zoning designation be applied to other parcels in the City, the impact to land use and planning would be assessed on a site-specific basis, and would be mitigated on a case-by-case basis.

As it relates to the Residential GPA, the proposal to increase density on 60 acres of the southern parcel will result in the eventual development of single family homes which will be developed to City standards. These standards are designed to allow for limited height, building setbacks and other standards that are consistent with single family development throughout the community. As a result, the Residential GPA, when considered in the context of other residential development allowed and expected in the General Plan, will not result in cumulative land use impacts.

2.13 Noise

2.13.1 Introduction

This section of the EIR describes existing conditions with regard to the local noise environment within the City of Twentynine Palms and analyzes the potential impacts by the proposed Project to the surrounding sensitive receptors. A wide range of data and information, ranging from research and regional scale planning and environmental documents, have been used in researching and analyzing the Project and its potential effects.

Fundamentals of Noise
Noise is defined as airborne sound that is loud, unpleasant, unexpected, and undesired. Sound becomes noise when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health.

Noise is measured in decibels (dB), which describes the amplitude or strength of noise. Human perception to noise is dependent on proximity to the source and the individual's sensitivity to frequencies. A-weighted decibel (dBA) approximates normal hearing sensitivity range of the human ear by discriminating against very low and very high frequencies of the audible spectrum. A normal conversation is about 55 dBA at a distance of 5 feet, whereas a loud engine noise is about 100 dBA. Most everyday sounds occur in the range of 40 dBA (very quiet) to 100 dBA (very loud).

Table 2.13-1 provides A-weighted noise levels from common sources.

Table 2.13-1
A-Weighted Decibel Scale

Common Outdoor Activities	Common Indoor Activities	A-Weight Sound Level (dBA)	Subjective Loudness	Effect of Noise
Threshold of Pain		140	Intolerable or Deafening	Hearing Loss
Near Jet Engines		130		
		120		
Jet Fly-Over at 300m (1000 ft)	Rock Band	110		
Loud Auto Horn		100	Very Noisy	
Gas Lawn Mower at 1m (3 ft)		90		
Diesel Truck at 15m (50 ft), at 80 km/hr (50 mph)	Food Blended at 1m (3 ft)	80		Speech Disturbance

Table 2.13-1
A-Weighted Decibel Scale

Common Outdoor Activities	Common Indoor Activities	A-Weight Sound Level (dBA)	Subjective Loudness	Effect of Noise
Noisy Urban Area, Daytime	Vacuum Cleaner at 3m (10 ft)	70	**Loud**	
Heavy Traffic At 90m (300 ft)	Normal Speech at 1m (3 ft)	60		
Quiet Urban Daytime	Large Business Office	50	**Moderate**	**Sleep Disturbance**
Quiet Urban Nighttime	Theater, Large Conference Room (Background)	40		
Quite Suburban Nighttime	Library	30	**Faint**	**No Effect**
Quite Rural Nighttime	Bedroom at Night, Concert Hall (Background)	20		
	Broadcast/Recording Studio	10	**Very Faint**	
Lowest Threshold of Human Hearing	Lowest Threshold of Human Hearing	0		

Source: Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety prepared by Environmental Protection Agency Office of Noise Abatement and Control, March 1974.

Characteristics of Sound

Environmental noise is the sum of many distant and indistinguishable noise sources. These sources can vary in intensity or loudness and can influence the ambient noise level based on its duration (continuous, intermittent, or impulsive) and frequency of sound. Perception may also depend on whether the noise is a "point source" or "line source". A point source refers to noise emitted at a single location from where sound waves radiate equally in all directions.[1] Examples of point source noise include a loudspeaker, alarm clock, and car horn, where noise originates from a centralized item/location and sound waves expand outwards in a symmetrical sphere. In contrast, line source refers to noise emitted by a source along a line or narrow segment where sound waves travel in a cylinder-shaped

[1] Clement Acoustics, "Noise Propagation", https://clementacoustics.co.uk/noise-propagation/, accessed February 2025.

pattern[2], rather than a sphere as in a point source. The most common instance of a line source is vehicular traffic.

Physical sound barriers can also influence the perception of noise in the environment. Sound barriers function by cutting the line-of-sight (noise path) between the noise source and the receiver through the use of structures designed to obstruct, reduce, or reflect sound waves and thus minimize the level of perceived noise. Walls and other forms of noise barriers are effective and typically used along very noisy areas, including highways and industrial uses. The effectiveness of these barriers is dependent on whether the entire line-of-sight is obstructed but generally, barriers may reduce ambient noise levels by 5 to 10 dB.[3]

Another factor reducing noise perception is distance. According to the inverse-square law, noise produced by a point source reduces by 6 dB each time distance is doubled.[4] As such, if a noise level is measured at 89 dB at a distance of 50 feet, then the noise level would decrease to 83 dB at 100 feet and again decrease to 77 dB at a distance of 200 feet.

To understand environmental noise, physical descriptions such as frequency range, intensity, and duration are required. The following terms are used to describe or numerically weight noise.

Equivalent Energy Level (L_{eq})
The equivalent sound level is used to describe noise over a specified period of time, simplifying the cumulative effect as if it were a constant sound during the same period. This metric is key when evaluating human response to sound and cumulative exposure over time that can result in noise induced hearing loss or damage.

Community Noise Equivalent Level (CNEL)
As described in the Municipal Code, CNEL is a 24-hour day A-weighted noise exposure comprised of 3 weighted periods including daytime (7 am to 7 pm), evening (7 pm to 10 pm), and nighttime (10 pm to 7 am). Sensitive hours occur during evening and nighttime hours and are weighted by an increase of 5 dBA to 10 dBA. The increase from 5 to 10 dBA is perceived as double the loudness of noise by the human ear.

2 WKC, "Sound Attenuation Calculator—Noise Line Source", https://www.wkcgroup.com/sound-attenuation-calculator-line-source/, accessed February 2025.
3 University of Florida GeoPlan Center, "Noise Barrier Inventory", https://www.geoplan.ufl.edu/noise-barrier-inventory/, July 2023.
4 WKC, "Sound Attenuation—Inverse Square Law", https://www.wkcgroup.com/tools-room/inverse-square-law-sound-calculator/, accessed February 2025.

Day-Night Average (L_{dn})

As described in the Municipal Code, L_{dn} is a 24-hour day and night A-weighed noise exposure level which accounts for greater sensitivity at nighttime. Daytime hours are between 7 am and 7 pm, evening hours are 7 pm to 10 pm, and nighttime hours are between 10 pm and 7 am. During nighttime, noise perception increases by 10 dBA to consider for greater annoyance of nighttime noises.

Human Response to Noise

The effects of noise on people can be grouped into three categories:

1. Subjective effects of annoyance, nuisance, dissatisfaction
2. Interference with activities such as speech, sleep, learning, etc.
3. Physiological effects such as hearing loss and sudden startling

Human response to noise changes depends on the individual's hearing sensitivity. For a person with normal hearing sensitivity, a small detectable change occurs at an increase of 3 dBA. A change of at least 5 dBA would be notable and cause some annoyance. A 10 dBA increase is heard as a doubling in loudness and would cause a community response.

Typically, people start to report annoyance at a noise level of about 55 dBA L_{dn}. If excessive noise is prolonged throughout a person's lifetime, it may result in hearing loss. Aging associated with hearing loss could also be accelerated by extended exposure to chronic noise. In some instances, disruption to a person's sleep schedule or daily activity by excessive noise could manifest and lead to other health issues including cardiovascular disorders, cerebrovascular disorder, metabolic disturbance, and psychological disorders.[5]

The California Occupational Safety and Health Administration (OSHA) set a noise exposure threshold where exceedance could result in hearing loss with long-term exposure. The maximum allowed noise level is 90 dBA over an 8 hour period. Above 90 dBA, exposure time is correspondingly shorter.[6]

Fundamentals of Vibration

Vibration is an oscillatory motion through a solid medium where the wave's amplitude can be described in terms of displacement, velocity, and

[5] Noise as a Public Health Hazard prepared by American Public Health Association, October 2021.

[6] Occupational Safety and Health Administration, "Temporary Worker Initiative: Noise Exposure and Hearing Conservation", accessed February 2025.

acceleration.[7] Common sources of groundborne vibration include construction activities, trains, and certain industrial operations (i.e. mining, heavy manufacturing equipment). Vibration is measured in terms of peak particle velocity (PPV) which quantifies vibration impacts to buildings and other structures. PPV levels represent the maximum instantaneous peak of a vibration signal and are measured in inches per second.[8]

Ground vibration is not as prevalent an issue as noise disturbance. Typically, vibration levels occur well below the threshold of human perception, approximately 0.02 inches per second. Plus, the duration of these events is short and occurs over an extended period, thereby reducing the times of perceived disturbance.

Table 2.14-2 summarizes average human response to groundborne vibration.

Table 2.13-2
Human Response to Groundborne Vibration

Average Human Response	PPV (in/sec)
Barely to distinctly perceptible	0.02 to 0.10
Distinctly to strongly perceptible	0.10 to 0.50
Strongly perceptible to mildly unpleasant	0.50 to 1.00
Mildly to distinctly unpleasant	1.00 to 2.00
Distinctly unpleasant to intolerable	2.00 to 10.00
Source: Transportation and Construction Vibration Guidance Manual prepared by California Department of Transportation, April 2020.	

2.13.2 Thresholds of Significance

The thresholds of significance analyzed herein have been taken from Appendix G of the State CEQA Guidelines. For purposes of this EIR, the proposed Project would have a significant effect on existing and planned land use if there was:

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;

[7] Moloney & Associates Acoustic and Environmental Consultants LTD, "Ground-Borne Vibration", https://acoustic-environmental.ie/ground-borne-vibration/, accessed February 2025.

[8] Transportation and Construction Vibration Guidance Manual prepared by California Department of Transportation, April 2020.

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?

The Initial Study determined that the Project would result in "No Impact" for threshold question c) because the Project is located more than 5 miles from the nearest airport, and development would not introduce new sensitive receptors to the area. Therefore, no impacts from exposure to excessive noise in connection to airport traffic activities would affect the Project or surrounding area. No further analysis on this threshold will be provided in this EIR.

2.13.3 Regulatory Framework

Federal

There is no federal policy establishing a national noise level standard for new development. Nor is there a specific federal regulation concerning noise impact onto sensitive noise receptors.

State

California Noise Control Act

Codified in Sections 4600 to 46080 of the California Health and Safety Code, the California Noise Control Act declares excessive noise as a serious hazard due to its potential for physiological, psychological, and economic damage. The Act therefore aims to protect the health and welfare of residents by controlling and abating noise within different land uses. Under the State guidelines, an exterior noise level of 70 dBA L_{dn}/CNEL is typically the threshold between acceptable and unacceptable exterior noise environments for sensitive receptors. Classification of sensitive receptors include any land use that may be utilized by those with a greater vulnerability or susceptibility to noise impacts, such as schools, libraries, churches, hospitals, day care centers, and nursing homes. Noise levels below 75 dBA L_{dn}/CNEL are typically acceptable for office and commercial buildings, while levels up to 80 dBA L_{dn}/CNEL are typically acceptable for industrial uses. Construction related noise impacts are generally considered to have less than significant impacts given the limited duration and non-fixed location.

Local

City of Twentynine Palms General Plan

The City General Plan includes a noise element, last updated in 2012, to identify noise sensitive land uses and noise sources and define areas of noise impact to achieve and maintain land uses that are compatible with environmental noise levels. The Plan also includes programs and policies governing noise sources within the City planning area. The following policies are applicable to the Project.

Policy NS-1.1 Noise generation impacts will be considered prior to any land use designation change and/or any land use intensification and uses will be located in a manner that minimizes noise impacts. Prior to approval of projects, which may result in significant noise pollution, the City will require noise analysis to ensure that noise levels do not exceed acceptable levels as defined by the City's Development Code. The City will require special design standards for proposed projects with the potential to exceed the noise level requirements. In cases where special design standards are required, the City will require mitigation plans to be certified by a registered acoustician.

Policy NS-1.4 Require all exterior noise sources (construction operations, air compressors, fans and leaf blowers) to use available noise suppression devices and techniques to bring exterior noise down to acceptable levels, as defined by the City's Development Code, that are compatible with adjacent land uses.

City of Twentynine Palms Municipal Code

Updated in February 2025, Chapter 19.80.070 (Noise Control) establishes noise thresholds for all land uses, including residential and non-residential uses, such as industrial, commercial, residential and open space. The standard for residential districts is 65 dBA CNEL for exterior noise, and 45 dBA CNEL for interior noise levels. The Noise Control ordinance also prohibits noise levels "when measured on any other property, either incorporated or unincorporated, to exceed:

1. The noise standard for that receiving land use, as specified in Table 19.80.070-1, for a cumulative period of more than 30 minutes in any hour; or
2. The noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour; or
3. The noise standard plus 10 dBA for a cumulative period of more than five minutes in any hour; or

4. The noise standard plus 15 dBA for a cumulative period of more than one minute in any hour; or
5. The noise standard plus 20 dBA for any period of time."

The Chapter also exempts noise resulting from construction activities between 7 AM and 7 PM from October through April, and 6 AM to 7 PM from May to September, except on Sundays and federal holidays.

Section 19.80.100 of the Chapter regulates vibration impacts. It prohibits vibration which can be felt without the aid of instruments at or beyond the lot line and any vibration which produces a particle velocity greater than or equal to 0.2 inches per second measured at or beyond the lot line.

2.13.4 Environmental Setting

The City General Plan Noise Element, is based on information and analysis provided by the General Plan-specific Noise Technical Report prepared by Mestre-Greve, as well as supporting evidence from the California Department of Transportation (Caltrans), and the General Plan traffic impact analysis prepared by Urban Crossroads. The following section draws from these reports.

Regional environmental noise consists of mobile and stationary sources. Major transportation corridors, most notably Twentynine Palms Highway, contribute most to traffic-related noise. To a lesser extent, other roadway classifications within the City's circulation system also contribute significantly to ambient noise levels, including Adobe Road, Utah Trail, Lear Avenue, Mesquite Springs Road, Two Mile Road, and Amboy Road. Noise contours along these corridors were recorded at 70 CNEL near the roadway centerline, based on 2012 traffic conditions. Future traffic noise control projections indicate these corridors would also generate 70 CNEL near the roadway centerline, however, the noise volume would be amplified to areas beyond those initially identified within the corridors' noise impact zone. This change indicates that the City anticipates greater traffic volumes and thus greater noise induced disturbance within areas located in immediate proximity to these corridors, especially within the Twentynine Palms Highway corridor.

Other sources of ambient noise in Twentynine Palms include aircraft noise from either general aviation operations or military overflight to or from the MCAGCC.

The Twentynine Palms Airport is located approximately 2 miles east of the City boundary, in the City's Sphere of Influence (SOI). The airport is used for general aviation flights, producing an estimated 559,689 operations in 2020 and projected to produce 494,093 operations in 2025 based on aviation forecasts by the

California Transportation Commission.[9] The airport's 60 CNEL contour as shown by Figure 2 in the Airport Comprehensive Land Use Plan[10] confirms no lands within Twentynine Palms would be subject to excessive noise from aviation activities nor would there be incompatibilities between the City's land uses and the airport's operation.

The MCAGCC operates the Twentynine Palms Expeditionary Airfield for military aviation use only. The Military Operations Area (MOA) extends from the base south to about Indian Trail, designating the area for military aircraft use only. The airfield located in the MCAGCC is within the City boundaries but isolated to the northern region. Noise sensitive land uses are exposed to limited occasional loud overflight. According to the City General Plan, none of these aircraft facilities result in significant impacts to the City or noise sensitive receptors.

In regard to stationary sources, noise from non-sensitive land uses such as general commercial users does not significantly contribute to the City's environmental noise, nor does it significantly impact nearby residential and/or public uses. Nonetheless, the City General Plan and Municipal Code set standards for new development to consider potential impacts to sensitive receptors and reduce any source of excessive noise in compliance with state and local policies and applicable codes. As such, Twentynine Palms' regional noise environment operates within acceptable noise levels.

2.13.5 Existing Conditions

The Project's proposed 477± acre site is undeveloped and unoccupied, and part of a larger undeveloped portion of Twentynine Palms' northwestern region. The closest sensitive receptors to the Project site are single-family residential homes located approximately 275 feet south of the Project site, on the south side of Two Mile Road. The Desert Congregational Church and single-family residential developments south of Two Mile Road are located approximately one-half mile southeast of the proposed solar facilities. The Solar Project site's relative isolation from nearby roads, including Two Mile Road located to the south, Sunrise Road to the east, and Shoshone Valley Road to the west, as well as distance from limited single-family housing to the east of Sunrise Road and south of Two Mile Road, suggests the property's environmental noise level is not impacted by noise sources.

[9] Table 4-2 in the California Aviation System Plan adopted by California Transportation Commission, August 2021.

[10] Airport Comprehensive Land Use Plan for Twentynine Palms Airport prepared by San Bernardino County Planning Department, May 1992.

Two Mile Road is identified as a major corridor generating a 60 CNEL noise contour that extends to the property's southern parcel under City build out conditions. The Project is located adjacent to Two Mile Road, while the Solar Project is located about 0.5 miles north and outside the corridor noise impact zone. Traffic volumes in the area of the Project were approximately 4,558 daily trips, as measured just west of the Project site in 2019.[11]

In regard to other regional sources of ambient noise, the site is located 1.24± miles north of Twentynine Palms Highway, 9.49± miles northwest of the Twentynine Palms Airport, and 4.13± miles from MCAGCC's MOA.

There are sensitive receptors within immediate proximity to the Project site, in the form of residential units on the south side of Two Mile Road, immediately south of the Residential GPA lands. The nearest sensitive receptors to the Solar Project site are residential units located beyond Sunrise Road and over 1,400 feet from the Project's eastern boundary. The Residential GPA parcel is currently undeveloped but designated for residential use. Future development will introduce new sensitive receptors on and near the Project site.

2.13.6 Project Impacts

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;

Solar Project Impacts

Construction

Ambient noise levels in the Project area are generally low, and primarily associated with traffic movements on Two Mile Road. Construction of the solar facility would occur over three phases including site preparation, installation and equipment interconnection, with a projected construction completion of 9 months. During this time, the primary source of noise will stem from on-site and off-site use of heavy construction equipment including excavators, tractors, graders, rollers, forklifts, and similar vehicles. Smaller equipment such as hand tools may also be used for the duration of the construction phase. Table 2.13-3 lists construction equipment that may be used during construction and their dBA noise levels at specified distanced from the point source.

[11] City-wide traffic safety report, 2019 traffic counts, City Engineer's office, City of Twentynine Palms.

Table 2.13-3
Estimated Construction Equipment Noise Levels

Noise Source	Noise Level 50 feet from Source (dBA)[1]
Excavator	85
Tractor	84
Grader	85
Roller	85
Dump Truck	84
Concrete Mixer Truck	85
Vibratory Pile Driver	95

[1] Specification "spec" limit for each piece of equipment at a reference distance of 50 feet from the loudest side of the equipment
Source: Construction Noise Handbook prepared by Federal Highway Administration, https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm, accessed February 2025.

Multiples of these pieces of heavy equipment will operate at once, and thus generate noise far above their individual use. However, most construction activities will be confined within the property's boundary and over 1,400 feet northwest of the nearest existing single-family home. Grading activities will consist of mobile equipment traveling across the site, which would generate noise levels of about 85 dBA at 50 feet, which attenuate by about 6 dB for every doubling of distance. At a distance of 1,400 feet, noise levels would be expected to be well below the City's standard of 65 dBA at the nearest existing home, as graders pass the northeastern corner of the site. This noise level will not be sustained, and will be reduced rapidly as equipment moves southerly or easterly on the site. In addition, this noise level will occur during the less sensitive daytime hours, and for a period of about 3 months (grading phase). The residents at the closest residential unit will not experience substantial sustained noise levels during the grading phase, and impacts would be less than significant. As shown in Table 2.13-3, the highest level of noise during construction of the Solar Project will be from pile drivers installing the solar racks on the site. These activities could generate noise levels of up to 95 dBA at 50 feet. At a distance of over 1,400 feet, those noise levels would be reduced well below the City's 65 dBA standard. Construction would be required to comply with the City's noise ordinance, which prohibits construction during sensitive hours when construction noise would be more noticeable.

Off-site improvements including construction of the main driveway from Two Mile Road to the Solar Project's southern boundary would subject the single family home located immediately south of Two Mile Road and Easy Street, at a distance of about 300 feet, to increased noise. Graders and rollers would be required to create and compact the driveway, and would generate noise levels of 85 dBA

at 50 feet when at the south end of the Solar Project driveway. At a distance of 300 feet, noise levels would be expected to be about 70 dBA. This level of noise would not be sustained, as equipment will move up and down the driveway and not remain at the southern boundary, would be limited to nonsensitive daytime hours, pursuant to City Municipal Code Section 19.80.020, and would be less than significant based on the City's Noise Control ordinance. Additionally, construction of the driveway would occur at the beginning of the site preparation phase, estimated to last approximately 4 workdays.

Another source of noise during the Project's construction is traffic noise along Two Mile Road and other regional and local corridors. As discussed in Section 2.17 (Transportation and Traffic) of this EIR, delivery trucks, construction vehicles, and worker vehicles will increase the use of Twentynine Palms Highway, Lear Avenue, and Two Mile Road. These corridors are designated "truck routes" by the City General Plan to restrict commercial trucks to major streets so as to avoid significant impacts to the City circulation system and sensitive land uses. The use of these corridors during the Project construction would minimize potential effects to sensitive receptors in the City. Those receptors located adjacent to Two Mile Road would experience temporary traffic-related noise disturbance during the Project's construction, which would immediately end after the 9-month construction period. As described in Section 2.4, Air Quality, Solar Project construction would employ between 100 and 200 people, which would generate 200 to 400 worker trips daily to and from the site. This represents a temporary increase of 4 to 9 percent per day over existing traffic volumes on Two Mile Road. Caltrans standards provide that a perceptible increase in noise of 3 dBA requires a doubling of traffic volumes. The increase of 4 to 9 percent in traffic volumes resulting from project construction worker trips will not be perceptible, and will result in less than significant impacts associated with noise levels to surrounding receptors south of Two Mile Road.

Although the Project is expected to have less than significant impact from construction-related noise, all Project-related construction activities would be exempt from noise ordinance limitations if conducted during the hours specified in the Municipal Code, and enumerated above. The provision sets a time restriction for when construction activities are allowed. The standard avoids sensitive nighttime hours by limiting construction on weekdays and Saturdays between the hours of 6 am to 7 pm from May 1st to September 30th, and between the hours of 7 am to 7 pm from October 1st to April 30th. No construction work is permitted on Sundays or federal holidays. Compliance with the City noise control standard would further reduce the probability for noise-related impacts onto sensitive receptors near the Solar Project site. The Project's construction would comply with applicable noise control standards designed to protect sensitive land uses from adverse noise impacts. Therefore, less than significant impacts to

the environmental noise level would occur as it relates to the Solar Project construction.

Operation

The Project proposes the installation of 160,000 ground-mounted solar panels, 170± inverters, a transformer, and supporting equipment. Of these, inverters and the transformer would generate noise. The applicant provided noise generation data on similar transformers and inverters to those planned for the Solar Project[12]. This information provides the basis for the analysis below.

Noise from solar inverters is usually caused by cooling fans and electrical switching. Cooling fans are used to manage heat exhaust of the equipment and maintain efficiency. These fans operate at a low hum, but noise levels may vary based on the cooling fan's design. Electrical switching converts solar generated electricity output from direct current (DC) to alternating current (AC) by rapidly switching the direction of the DC input.[13] This process creates a phenomenon known as "coil whine," a type of high-pitched noise that results from vibration in the coil as the current changes directions.[14]

The site will consist of approximately 170 inverters mounted on tracks throughout the solar field and consolidated in areas to minimize cable routing, trenching, and electrical loss. The applicant described in application materials that the inverters are 225 kW SG250HX-US inverters. Similar utility-scale string inverters, such as the Power Electronics Multi PCSK model, are rated at less than 79 dBA at 1 meter from the casing rear. The closest sensitive receptors to the Solar Project are located over 1,400 feet from the property line. Noise levels, as described above, attenuate at 6 dB for each doubling of distance. The 79 dBA generated at 1 meter from the units would therefore be substantially reduced below the City's 65 dBA standard at 20 feet distance (over 6 meters). Given the site's relative isolation from development, sensitive noise receptors are not expected to perceive noise from on-site inverters at any point during daytime and nighttime hours. Existing residential units to the east of the Solar Project are over 1,400 feet from the property boundary, and will not experience high noise levels from the inverters.

12 Inverters: *Power Electronics. 2021. Technical Characteristics – Freemaq Mult PCSK 690V*. Rev. 1-1 20210311. Transformers: *ABB 2004. Power IT Liquid Filled Transformers, Technical Data Sheet.*

13 Solar Integration: Inverters and Grid Services Basics prepared by U.S. Department of Energy, https://www.energy.gov/eere/solar/solar-integration-inverters-and-grid-services-basics, accessed February 2025.

14 Solar Ctrl, "Solar Inverter Noise Levels: A Comprehensive Analysis", https://www.solarctrl.com/blog/solar-inverter-noise-levels/, February 2024.

Transformers are another source of noise in solar facilities. Noise from transformers consists of core, coil and fan noise.[15] The core and coil noise is generated by equipment converting electricity to match the interconnection voltage. Fan noise, like that of inverters, is caused by cooling fans. Together, these noises produce a humming sound that could influence ambient noise levels.

The Solar Project proposes the use of one transformer, placed on a concrete pad at the site's southeastern corner, immediately adjacent to the unpaved portion of Samarkand Drive, defining the site's southern boundary. At this location, the transformer is approximately 1,650 feet from the nearest sensitive receptor located on the east side of Sunrise Road, and approximately 1,000 feet from Desert Congregational Church at the northeast corner of Two Mile Road and Sunrise Road. Sound pressure levels for medium-sized liquid-filled distribution transformers (in the 1,000–2,000 kVA range) are approximately 63 to 73 dBA at 1 meter from the transformer, based on the data provided by the applicant from the manufacturer. At a distance of 1,000 feet, transformer noise would be expected to attenuate well below the City's standards at 15 feet (about 5 meters) and would not be perceptible at the nearest sensitive receptors.

Traffic noise is another source of noise during the Project's operation. The solar facility will be unmanned and monitored remotely. The only source of traffic noise would occur when maintenance is required. On-site visits will occur infrequently, and these vehicle trips will utilize regional/local roads to access the site, including Twentynine Palms Highway, Lear Avenue, and Two Mile Road. Traffic noise is based on increases to daily trip volumes on surrounding roads. In this case, the Solar Project will not contribute to daily increases in trip volumes, since visits to the site will be limited to maintenance and repair visits as needed. As a result, the Solar Project will not result in a permanent increase in traffic volumes, or increased noise associated with traffic volume increases. Project-related traffic noise on off-site roadways will not cause a distinguishable difference on existing traffic noise along these corridors.

Overall, the Project's operation will primarily generate noise from inverters and a transformer. Noise from this equipment would be emitted as humming sounds at a low volume. Noise perception would occur primarily on-site and decrease with distance from the site. Traffic noise is also expected to occur in relation to on-site maintenance and service visits; however these vehicle trips are limited and infrequent and would not increase the off-site roadways' noise levels. In relation to sensitive land uses, noise generated on-site is not expected to adversely affect residents or exceed existing noise from traffic, household appliances, and other

[15] Acentech, "Yes, Solar Farms Can Produce Noise!", https://www.acentech.com/resources/yes-solar-farms-can-produce-noise/, June 2020.

residential activities. Therefore, less than significant impacts to noise levels are anticipated by the Project's operation.

Decommissioning

The solar facility is anticipated to be operational for 35 years, after which point the facility will be decommissioned, and all solar equipment will be removed from the property. The process is likely to require the use of heavy construction equipment to uninstall and transport PV panels, racks, and other material onto hauling trucks to then be transported to either a recycling facility or relocated for repurposing. The decommissioning phase is therefore expected to cause noise related to the use of heavy construction equipment, off-site hauling trucks, and worker vehicles. Noise at this phase will be temporary and subject to the City's noise control standards under Section 19.80.020 of the City Municipal Code which limits all construction activities within nonsensitive daytime hours with the exception of Sundays and federal holidays. Under these conditions, the Project's decommissioning would cause temporary impacts to environmental noise levels, none of which would cause permanent adverse effects to nearby sensitive noise receptors or exceed existing major noise sources in the area. Therefore, less than significant impacts are anticipated.

Residential GPA Impacts

At this time, the Project does not propose the use or development of the 60 acres at the southwest corner of Samarkand Drive and Noels Knoll Road. Therefore, no ambient noise impacts would occur on the southern parcel.

The Project proposal for a GPA on the southern parcel will increase the allowed density within an existing residential zone. The land use redesignation would therefore not introduce a non-sensitive land use such as commercial or industrial uses, which have the potential to be noisy and incompatible with noise sensitive uses in the area. The change in land use would be consistent with the City's General Plan noise management policies in which sensitive land uses are generally separate from those with a higher probability for noise disturbance due to on-site operations.

Future buildout of the Residential GPA may result in 119 single family homes, 48 of which would occur on the Solar Project site under current conditions. Buildout of the Residential GPA is expected to occur gradually over several years. Each construction phase would be subject to the City's most current noise standards and likely cause limited noise disturbance by nature of the temporary construction activities, limited disturbance associated with single family home pads, and minimum lot sizes of one acre.

During operation, all residential development would be required to comply with the City's noise standard for residential uses that sets an interior noise level at 45 dBA and exterior level at 65 dBA, at all times of the year. Single family homes do not generate excessive noise, nor would excessive noise be expected to occur during the life of a residential subdivision. Future homes proposed on the Residential GPA lands would be required to comply with City standards, will be subject to review under CEQA, and thus will minimize adverse effects to on-site and off-site sensitive receptors.

When a project is proposed on the Residential GPA parcel, project-specific CEQA analysis will determine the property's risk and adverse effects, and if required, implement mitigation measures to reduce significant impacts to less than significant levels. As described above, future residential development on the southern parcel is unlikely to cause or be affected by significant adverse effects. Less than significant impacts are anticipated.

Summary

The Project will generate noise at all phases of development including construction, operation, and decommissioning for the Solar Project. Long term noise on the Solar Project site will be caused by on-site inverters and transformer. As determined by the analysis above, these sources of noise would marginally contribute to the local environmental noise and occur below detectable levels to nearby receptors. Therefore, noise impacts are less than significant.

As it relates to the Residential GPA, no noise impacts would occur on the southern parcel until development occurs. At this time, no formal development proposal has been submitted and the southern parcel will remain undeveloped and unoccupied. When development is proposed, noise levels generated by single family homes would be analyzed under CEQA, but are not expected to significantly impact the environment. Therefore, the Residential GPA will not contribute substantially to the regional ambient noise now or in the future. Less than significant impacts will occur.

b) Generation of excessive groundborne vibration or groundborne noise levels;

Solar Project Impacts

Construction

Construction sites are typically associated with groundborne vibration by their use of construction equipment that drill and compact the soil column, generating a source of vibration. The Project construction would require the use of heavy construction equipment such as pile drivers, excavators, graders, and rollers.

Table 2.13-4 identifies the potential for groundborne vibration levels from the use of construction equipment typically found in construction sites. As shown below, pile drivers, which will be used in the construction of the racks for the solar panels, have the highest vibration level, at an average of 0.644 PPV at 25 feet.

Table 2.13-4
Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 ft (in/sec)
Vibratory Roller	0.21
Hoe Ram	0.089
Caisson drilling	0.089
Loaded trucks	0.076
Jackhammer	0.035
Small bulldozer	0.03
Pile Driver	0.644
Source: Transit Noise and Vibration Impact Assessment Manual prepared by Federal Transit Administration, September 2018, Caltrans.	

Equipment used during construction is likely to operate simultaneously, and thus generate groundborne vibration above the 0.20 PPV threshold for human perception at a distance of 25 feet. However, the Project site is isolated from nearby development with the area being undeveloped desert lands. The most significant vibration would be expected from a pile driver, which would generate 0.644 PPV at 25 feet. With groundborne vibration, the strongest effects are felt in proximity to the point source and its strength diminishes with distance. The nearest sensitive receptors from the Solar Project are residential units to the east, approximately 1,400 feet, and the Desert Congregational Church, approximately one-half mile south of the Solar Project site at the northwest corner of Two Mile Road and Sunrise Road. Based on distance, the vibration level would be expected to be no more than 0.001 at the existing homes, and even less at the church, and would therefore be below the 0.2 PPV threshold for human perception, and would not be sufficient to cause structural damage to nearby homes or Desert Congregational Church.

Although impacts from groundborne vibration during the Project construction are expected to be limited, all construction activities including those inducing ground vibration would be limited to nonsensitive daytime hours, pursuant to City Municipal Code Section 19.80.020.

Overall, Solar Project construction is likely to generate groundborne vibration through its use of heavy construction equipment. However, the effects are likely to be confined at or in the proximity to the property. Beyond this area, the residential development on the east side of Sunrise Road and Desert

Congregational Church on the north side of Two Mile Road are unlikely to perceive ground borne vibration, nor would these homes/facilities be susceptible to structural damage from vibration. The Project will comply with the City's construction standards to further reduce potential impacts. As such, groundborne vibration from the Project's construction would have less than significant impacts relating to ground borne vibration.

Operation
During operation, the solar facility will be unmanned and monitored remotely. Visits for maintenance will occur on an as-need basis. None of these activities are known to be sources of ground vibration. Even if a source were to occur on-site, the Project would be required to comply with the City vibration standard prohibiting any stationary source from generating groundborne vibration at or greater than 0.20 PPV at or beyond the property line. With compliance with applicable City standards as well as the Solar Project's lack of vibration sources and relative distance from nearby development, no impacts are anticipated.

Decommissioning
As with construction, decommissioning activities associated with the Project would result in groundborne vibration. Heavy construction equipment would be utilized on-site, some of which may be listed in Table 2.13-4. Given the property's isolation, distance from nearby receptors, and the temporary duration of decommissioning activities, the probability for groundborne vibration to cause significant impacts is very low.

Residential GPA Impacts

The land use redesignation would not introduce a source of ground vibration on the southern parcel. No development is proposed in connection to the Project buildout. The parcel will remain undeveloped and unoccupied.

Development for residential use would occur when projects are proposed, and the construction of these residential projects may generate vibration from grading and paving activities for a limited time. Sources of vibration in residential homes will not result in impacts to adjacent homes. In addition, all development would be required to comply with the City's vibration standard as mandated by Municipal Code Section 19.80.100 (Vibration). Although impacts are anticipated as less than significant, project-specific CEQA analysis would analyze potential effects and make the final determination on whether mitigation is required to address impacts.

Summary

On-site activities related to the Solar Project's construction and decommissioning will result in groundborne vibration. However, these impacts will be temporary and occur at a substantial distance from sensitive receptors and structures. Any potential impact will be further minimized by the Project's avoidance of sensitive nighttime hours for on-site and off-site construction and decommissioning work. No sources of vibration are expected during operation. Therefore, no adverse effects would be imposed on nearby sensitive receptors. Lastly, the Residential GPA in and of itself would not introduce a source of ground borne vibration to the southern parcel. Nor does the development propose any use of the southern parcel which could introduce a source of vibration. Impacts of the Project overall are expected to be less than significant.

2.13.7 Mitigation Measures

The Project's impacts related to noise and vibration are less than significant. Therefore, no mitigation measure is required.

2.13.8 Significance After Mitigation

Impacts will remain less than significant.

2.13.9 Cumulative Impacts

Both the solar facility and the future residential development would generate noise and thus marginally increase the ambient noise environment. The levels of noise generated by the Project will not exceed City standards, and will be subject to General Plan and Municipal Code requirements. There are no existing or currently proposed projects that are likely to cumulatively contribute to noise in the project area. Future development in the City under the General Plan will increase the noise levels in the City at build out, and affect the ambient noise environment. However, the General Plan's land use map concentrates noisier uses, such as commercial and industrial uses, to major streets, and isolated sensitive receptors, such as residences, from these noise sources by creating neighborhoods away from major roadways. Future development in the City will be analyzed to determine whether it meets City standards, and will be required to mitigate noise impacts if it does not. These standards and requirements assure that noise levels at General Plan build out will not exceed the established CNEL levels, and that the City's noise environment remains compatible with its land uses. Cumulative impacts are expected to be less than significant.

2.14 Population and Housing

2.14.1 Introduction

This section of the EIR describes existing population and housing conditions in the Project area. It analyzes the potential impacts of the proposed Project on those resources, including changes in population and the demand for housing. The analysis is based, in part, on data and information from a variety of sources and agencies including the Twentynine Palms General Plan, the Southern California Association of Governments, and the U.S. Census Bureau.

2.14.2 Thresholds of Significance

Project impacts to population and housing are analyzed using the thresholds of significance provided in Appendix G of the CEQA Guidelines. Appendix G uses the following questions to evaluate the project's potential impacts.

Would the project:

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)?

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The Initial Study determined that the Project would result in "No Impact' for threshold question b), because the site is vacant and would not displace people or require replacement housing for on-site residents. Therefore, it is not analyzed further in this EIR.

2.14.3 Regulatory Framework

Federal

There are no federal regulations governing population and housing that apply to the proposed Project.

State

California Government Code §65583(c)(1)

California Government Code §65583(c)(1) is part of the state's Housing Element Law, which outlines requirements for local governments to plan for housing needs. Specifically, this subsection mandates that a city or county's housing element include a program to make sites available for residential development to meet its share of the regional housing need. The program must:

- Identify specific sites or actions to provide adequate land with appropriate zoning and development standards.
- Ensure these sites can accommodate the jurisdiction's allocated housing needs for all income levels (very low, low, moderate, and above moderate) as determined by the Regional Housing Needs Allocation (RHNA).
- Include a schedule of actions to facilitate development within the planning period, such as rezoning or providing infrastructure, to ensure the sites are viable for housing construction.

SB 330: No Net Loss

California Senate Bill 330 (SB 330), known as the Housing Crisis Act of 2019, includes a "no net loss" provision aimed at preserving housing capacity and preventing reductions in residential density as part of its broader effort to address the state's housing shortage. The "no net loss" rule prohibits local jurisdictions from enacting new laws that would have the effect of reducing the legal limit on new housing within their borders or delay new housing via administrative or other regulatory barriers. This means local governments cannot decrease the potential number of housing units through zoning changes or other policies unless they simultaneously increase density elsewhere to offset the loss, ensuring no overall reduction in housing capacity.

Regional/Local

Regional Housing Needs Allocation

The Southern California Association of Governments (SCAG) prepared the Regional Housing Needs Allocation (RHNA) for the County of San Bernardino and its cities as required by Government Code §65584. The RHNA allocates to cities and the unincorporated county their share of the region's projected housing needs for an eight year period (currently 2021-2029).

SCAG Regional Transportation Plan / Sustainable Communities Strategy

The 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), prepared by SCAG is a long-range plan for achieving connected transportation projects and investments across its six-county region. The RTP/SCS

includes a Demographics and Growth Forecast technical report, which projects employment, population, and household growth at the jurisdictional, county, and regional levels for the purpose of developing long-range regional land use and transportation planning strategies. The SCAG population, households, and employment projections for the City of Twentynine Palms are shown in Table 2.14-1.

Table 2.14-1
SCAG Growth Forecast – City of Twentynine Palms

Population		Households	
2019	**2045[1]**	**2019**	**2050**
27,600	33,300	8,200	11,700

Source: Southern California Association of Governments RTP/SCS Demographics and Growth Forecast Technical Report (April 2024); SCAG RTP/SCS Demographics and Growth Forecast Technical Report (September 2020).
[1] The RTP SCS 2024 Demographics & Growth Forecast Technical Report (April 2024) does not provide 2050 population projections for Twentynine Palms. The RTP SCE 2020 Demographics & Growth Forecast Technical Report (September 2020) was referenced for population projections.

Twentynine Palms General Plan

The Twentynine Palms General Plan outlines policy approaches to enhance community identity and strengthen quality of life at the community level. The following policies in the Land Use and Housing Elements are relevant to population and housing.

Housing Element

Policy HS 2.1 Utilize the Land Use Element, Development Code and other land use controls to provide housing sites that can facilitate and encourage the development of a variety of housing consistent with the City's identified local needs and its regional housing responsibilities.

Policy HS 2.7 Provide adequate sites for the development of new housing through appropriate land use and zoning designations to accommodate the City's share of regional housing needs.

Land Use Element

Policy LU 3.4 Provide opportunities for a variety of residential densities to accommodate rural and suburban lifestyles, and housing types for all economic and demographic segments of the City's population, with convenient access to public facilities, employment and shopping.

2.14.4 Environmental Setting

Population

The City's 2012 General Plan lists an ultimate buildout (2027-2032) population of 103,275 for the entire City, including 22,500 for the MCAGCC. Per the 2020 U.S. Census, the city's total population was 28,065, which includes the MCAGCC. As shown in Table 12.14-1, the City's population is projected to increase to 33,300 (18.6%) by 2045, which is 69,975 people less than the General Plan buildout projections.

Housing

The 2012 General Plan projected the City to have 30,429 dwelling units at buildout (2027-2032), including 2,489 dwelling units in the City's Sphere of Influence. According to Table 12.14-1, the number of housing units City-wide is projected to be 11,700 by 2050, which is 16,240 dwelling units less than the General Plan buildout projections.

2.14.5 Existing Conditions

According to the United States Census Bureau 2019-2023 American Community Survey (ACS) 5-year estimates, the City of Twentynine Palms has a 2023 population of 28,734 and 9,726 households.[1]

The 477-acre site is currently vacant and undeveloped. The site is bounded by Amboy Road (extended) on the north, Two Mile Road on the south, Noels Knoll Road (extended) on the east, and Canyon Road on the west. Two Mile Road is the only paved road bordering the Project site.

The City's Land Use and Zoning Map designates the project site's northern 360 acres as Rural Living (RL-5, 0.2 DU/AC) and the southern 117 acres as Single-Family Residential – Estate (RS-E, 0.4 DU/AC). In total, the project site currently permits a maximum buildout of 119 single-family dwelling units.

Lands adjacent to the Project site are generally vacant, with widely scattered low density residential units located on the south side of Two Mile Road, and designated Single-Family Residential – Estate (RS-E), 2.5 acre minimum lot size, consistent with the southern portion of the Project site. Scattered residential units are also located to the east of the Project site, at about 1,500 feet from the site.

[1] *QuickFacts: Twentynine Palms city, California*. (2024). Census Bureau QuickFacts; United States Census Bureau. https://www.census.gov/quickfacts/fact/table/twentyninepalmscitycalifornia/HSD410223#HSD410223

Utility infrastructure in the area includes an aboveground water reservoir located east of Sunrise Road and north of Samarkand Drive, and power lines running along Sunrise Road and the south side of Two Mile Road. Southern California Edison manages a transmission network from the Carodean Substation, situated on the south side of Two Mile Road, east of Canyon Road. Additional utility connections consist of local distribution lines serving individual parcels. Twentynine Palms does not have a local sewer collection and treatment service system. As such, wastewater is disposed of through individual septic tanks. Domestic water is provided by the Twentynine Palms Water District and by private wells on individual properties. Please see Section 2.19, Utilities and Service System, for a detailed analysis of infrastructure in the vicinity of the Project site.

2.14.6 Project Impacts

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)?

The Project would result in the development of a commercial solar project which will connect to the SCE substation and add to the electricity supply. The Project also proposes a General Plan map amendment to re-designate 60 acres of the Project site from Rural Living (RL-5) to Single-Family Residential, 1 acre minimum (RS-1), relocating the 48 units lost due to the Solar Project.

Solar Project Impacts

The Solar Project in and of itself would not induce substantial unplanned population growth in the area. The proposed solar Project will generate temporary construction jobs, and once operational will not require daily on-site personnel to manage its routine functioning. The solar panels, inverters, and monitoring systems are designed to operate autonomously, with energy production and basic performance overseen remotely through advanced software and sensors. Limited maintenance jobs will be required that are periodic and task-specific, including panel cleaning, inspections, repairs, vegetation management, and system monitoring support. These tasks require a small, specialized workforce visiting the site intermittently from outside the area. Construction jobs created by the Solar Project are expected to be filled by people already living in the city or region; therefore, new employment opportunities associated with the proposed Solar Project are expected to be limited to 100 to 200 individuals for a limited time, and would not induce significant population growth via relocation for employment.

Development of the Solar Project will not require the expansion, extension or construction of new public streets or utilities that would indirectly induce population growth because all infrastructure required to serve the Project either already exists or is proposed as part of the Project, including an on-site access road and solar power utility connections. Roads adjacent to the Solar Project, including Samarkand Drive, will be dedicated to the City but not improved by the applicant. Rather, they will be improved at a later date, at the City's discretion, as part of the Development Agreement being considered with the Solar Project.

The Solar Project would extend a connection from the Project's transformer to the existing substation, solely for its use, and not for regional use. The power generated by the Solar Project, once connected to the substation, would be routed at SCE's discretion to its power grid, and would not directly increase the availability of electricity in the City.

The Solar Project would not increase the number of dwelling units or population on-site. Rather the Solar Project will eliminate the potential for 48 residential units on the northern 187 acres of the site. In order to assure that there is no net loss in residential units, consistent with SB 330, the southwestern 60 acres at the Samarkand Drive and Noels Knoll Road will be re-designated and rezoned to Single Family Residential – 1 acre minimum (RS-1) to assure that sufficient residential units can be built to offset the loss of units from the development of the Solar Project. This increase in density will comply with State law, but will not increase the development potential in the City, as further analyzed below. Impacts associated with increases in population will be less than significant.

Residential GPA Impacts

The Project does not currently propose development of the southern parcel. The Residential GPA would replace the residential units lost under the Solar Project by transferring them to the 60 acres at the southwest corner of Noels Knoll Road and Samarkand Drive. Because the units are planned under the current General Plan, the Residential GPA will have no impact on population growth, but will rather move that planned population from the north half to the south half of the property.

Eventual development of the southern parcel will generate construction jobs, but since development of single family houses is expected to occur over several years, it is also expected that the construction workers would be from the City or region, and that no population growth would result from relocation for employment.

Future development of the southern parcel will require the construction of Samarkand Drive and Noels Knoll Road, as well as interior streets within future subdivisions north of Two Mile Road to access future residences. All of these roadways are local streets not identified in General Plan text nor are they shown on the General Plan Circulation Map; however, local streets serve a critical role in providing access and transportation within neighborhoods. Therefore, local streets are part of the City's existing circulation system and planned buildout and are not considered expansions of the existing circulation system.

Minor utility extensions will be required to extend service laterals from existing lines into the Project site from the adjacent rights-of-way. These improvements would only serve the Project site and would not impact regional population growth.

As discussed under the Environmental Setting section, above, the General Plan projected significantly more rapid population growth between 2012 and 2035 than has occurred or is likely to occur in the City. The General Plan projects a buildout population of 103,275 by 2032, based on a 20-year forecast from 2012. Compared to the 2023 Census population of 28,734, achieving this buildout would require a 259% population increase over the 9 years from 2023 to 2032. However, growth according to current Census data (28,734) and SCAG projections (33,300 by 2045) shows a growth of approximately 15.9% over a 22 year period. As such, less growth has occurred in the wider planning area than anticipated in the General Plan, and the replacement of the 48 units lost on the Solar Project site will not impact anticipated population growth in the City. Therefore, while the Project could potentially contribute to population growth, the impacts to population growth in the Project area overall are not expected to increase beyond what was planned in the General Plan. Overall, the Project will induce population growth, but the associated impacts are expected to be less than significant.

2.14.7 Mitigation Measures

The proposed Project will not have a significant adverse effect on area or regional population or housing, and no mitigation measures are required.

2.14.8 Significance After Mitigation

Impacts associated with population and housing will be less than significant.

2.14.9 Cumulative Impacts

The proposed Project will replace 48 units lost on the Solar Project property by increasing density on 60 acres of land at the southwest corner of Noels Knoll Road and Samarkand Drive. It will also generate temporary construction jobs. It is expected that Project-related employment opportunities will be filled by current

residents of the City and region, and therefore will not significantly increase the local population or increase demand for housing.

The housing, jobs, and infrastructure proposed by the Project, in combination with other future developments in the City, would all contribute incrementally to population growth. Given that the Project would not increase the number of residential units projected in the General Plan, cumulative impacts associated with population are also not expected. As discussed above, population growth in the area since 2012 has been significantly slower than anticipated, and General Plan growth projections were much more aggressive than has actually occurred. Therefore, while the Project will contribute to cumulative population growth, impacts related to unplanned population growth would not be cumulatively considerable.

2.15 Public Services

2.15.1 Introduction

The following section analyzes the potential impacts to public services including fire, police protection services, schools, parks, and community services in the City of Twentynine Palms resulting from the proposed Solar Project and the Residential GPA. Together these two projects are referred to as the "Project." Data pertaining to existing public services, regional environmental planning documents, and research conducted for the Project site form the basis of this analysis.

2.15.2 Thresholds of Significance

Potential impacts to public services are analyzed using the thresholds of significance provided in Appendix G of the CEQA Guidelines. Appendix G uses the following questions to evaluate the Project's potential impacts.

Would the project:

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:

- Fire Protection?
- Police Protection?
- Schools?
- Parks? (see Section 2.16, Recreational Resources)
- Other Public Facilities?

2.15.3 Regulatory Framework

Federal

There are no federal regulations governing public services that apply to the proposed Project.

State

Senate Bill 50

Senate Bill 50 (SB 50), also known as the Leroy F. Greene School Facilities Act of 1998, sets forth school facility finance and developer fee reform legislation for school facilities' construction and modernization. California Government Code §65995 stipulates the legislative criteria for assessing construction fees. To maintain pace with inflation, fees may be periodically adjusted, and such adjustments are regulated by the California Department of General Service State Allocation Board which sets the maximum fee threshold per the adjustment for inflation in the statewide cost index for Class B construction. A state or local agency is prevented from denying the approval of planning, use, or development of a real property on the basis of a developer's refusal to pay school mitigation fees in excess of the amount required by SB 50. School mitigation fees authorized by SB 50 are deemed to provide complete mitigation of potential project impacts to school facilities.

2022 California Fire Code, Title 24, Part 9

California Fire Code (CFC) Chapter 12, Energy Systems, Section 1205, sets site planning guidelines for photovoltaic systems including ground-mounted systems. Guidelines for constructing perimeter and interior pathways, emergency escape and rescue openings, setbacks, rapid shutdown capability and vegetation maintenance are described in the July 2024 CFC Supplement.

Local

City of Twentynine Palms General Plan 2012

The General Plan addresses public facilities in its Safety Element. The following policies are applicable to this analysis.

Goal SF-4 Reduce the risk of death, injury, property damage and economic loss due to structure and vegetation fires.

Policy SF-4.1 New habitable structures shall be constructed in accordance with the most recent California Fire Code.

Policy SF-4.2 Cooperate with the Twentynine Palms Fire Department to regularly re-evaluate specific fire hazard areas and adopt reasonable safety standards covering such elements as adequacy of nearby water supplies, fire flow tests, fire hydrants, routes or throughways for fire equipment, clarity of addresses and street signs and maintenance.

Policy SF-4.4 Encourage the Twentynine Palms Water District to review and improve as needed the adequacy of the water storage capacity and distribution network, with priority given to the water mains that extend across the Pinto Mountain and Mesquite Lake faults.

Policy SF-4.6 Cooperate with outside agencies to ensure fire, police and medical personnel, equipment and services should adequately meet the needs and serve all areas of the planning area.

Goal SF-6 Maintain a high level of emergency response capability.

Policy SF-6.1 Maintain, update and adopt the City's Local Hazard Mitigation Plan on a regular basis.

Policy SF-6.2 Adopt the City's Local Hazard Mitigation Plan (LHMP) in conformance with Assembly Bill 2140 (2006).

Policy SF-6.3 Maintain and update an Emergency Response Plan that ensures that the emergency response organization and resources are identified, and where emergency response procedures are provided.

Policy SF-6.4 Ensure the City's emergency plans are consistent with the regional, state (SIMS), and Federal (NIMS) standards, guidelines and/or recommendations.

Policy SF-6.5 Maintain mutual aid agreements with neighboring cities and the San Bernardino County Operational Area.

Policy SF-6.6 Provide training to all City employees on their roles and responsibilities in times of disasters and local emergencies and participate in appropriate regional and local emergency exercises.

Policy SF-6.9 Enhance public awareness and preparedness by encouraging residents and businesses to store supplies for self-reliance following a disaster and educate residents and businesses regarding mitigation measures to take prior to, during, and after and emergency.

2.15.4 Environmental Setting

The City contracts with the San Bernardino County Fire Protection District (SBCoFD) for fire protection services. The San Bernardino County Sheriff's Department provides law enforcement services for the City. Public education services are administered by the Morongo Unified School District (MUSD). The City maintains the public parks and recreation facilities and offers various community services which are discussed further in Section 2.16, Recreational Resources.

2.15.5 Existing Conditions

The Project encompasses 477± acres of vacant land in the rural northwest portion of Twentynine Palms. North of Samarkand Drive, 241 acres are proposed for the Solar Project while 60 acres south of Samarkand Drive and west of Noels Knoll would change to Single-Family Residential (RS-1).

The Solar Project would not contain any new residences and the solar field would be an unmanned facility. Impacts on public services, which are discussed below, are likely to be minimal. The Residential GPA proposes an RS-1 zone for 60 acres south of Samarkand Drive and west of Noels Knoll Road, which would move the 48 units lost on the Solar Project land and result in 119 residents.[1] These homes are not proposed to be constructed immediately; however, forecasted impacts to public services are discussed as part of the overall Project impacts. When the residences are proposed, project-specific study of environmental impacts will be required.

Fire Protection

The SBCoFD provides all-risk/full-service fire protection services, including, but not limited to, fire suppression, emergency medical services, hazardous materials waste management services, and community education programs. SBCoFD fire protection services are provided by a staff of 1,017 for a total of 65 communities, which include 24 incorporated cities, across 19,278 square miles. SBCoFD operates 67 fire stations across five divisions. In Division 4, the Division in which the City is located, there are four active fire stations serving the Morongo Basin. Station #44 at 6560 Adobe Road in Twentynine Palms is the nearest station to the Project. SBCoFD Division 4 Headquarters is 18.6 miles west on 6942 Airway Avenue in Yucca Valley.

The California Board of Forestry and Fire Protection designated the SBCoFD as a 2024 Fire Risk Reduction Community (FRRC), which positively impacts the District's eligibility for receiving CAL FIRE Wildfire Protection Grants.

[1] California Department of Finance, "City/County Population and Housing Estimates, Table 2" January 1, 2024.

In Twentynine Palms, property owners directly pay the SBCoFD for fire protection services.

Police Protection

The San Bernardino County Sheriff's Department's territory extends to over 20,000 square miles and employs 2,094 sworn personnel and 2,114 professional staff. The local sheriff's station is located at City Hall, 6135 Adobe Road. The Morongo Basin Sheriff's Station, which is twelve miles west of Twentynine Palms, is located at 6527 White Feather Road, Joshua Tree. Costs of law enforcement services are paid from the City's General Fund and have accounted for 40%-46% of the City's operating expenses. Approximately 24% of the General Fund is supported by property taxes.

Public Education

The Morongo Unified School District (MUSD) operates eighteen schools throughout the Morongo Basin with a total enrollment of 7,361 students. In Twentynine Palms, there are four elementary schools, one middle school and one high school. MUSD receives funding from property tax revenue; approximately 25% of the City's property tax revenue is directed to MUSD. MUSD also receives funding from developer fees which are calculated based on project type and project square-foot measurements.

Parks, Recreation and Community Services

The City of Twentynine Palms contains 175 acres of recreational areas consisting of parks, special use areas, and passive use areas which are managed by the City, MUSD and the MCAGCC. The City's Community Services Department manages five City parks which include 72.7 acres of land and feature multiple recreational facilities from a community swimming pool and ball fields to picnic areas, playgrounds and public art displays. Youth, adult and senior programs are provided to the community.

According to the 2012 General Plan, the City strives to maintain a level of service of 4.2 acres of parkland per 1,000 residents. City park maintenance and new facilities area funded by property tax revenue. Funding for City recreational and community services comes from the City's General Fund. These services have recently comprised between 13% and 14% of the City's operating expenditures[2].

[2] Personal communication, Ms. Abigail Hernandez Conde, CPA, Finance Director, City of Twentynine Palms, February, 2025.

2.15.6 Project Impacts

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:

- ***Fire Protection***
- ***Police Protection***
- ***Schools***
- ***Parks (see Section 2.16)***
- ***Other Public Facilities***

Solar Project Impacts on Fire Protection Services

The Solar Project would be an unmanned solar electric generating complex comprised of ground-mounted steel racks supporting photovoltaic solar arrays. Wires under the solar arrays would transport the electricity to inverters, then to an on-site transformer, and finally to the Carodean Substation on Two Mile Road. The majority of materials are deemed to be non-combustible. Nevertheless, the Solar Project would be subject to review and approval by the SBCoFD and would be required to design access throughout the Solar Project site for emergency vehicles.

In Twentynine Palms, property owners directly pay the SBCoFD for fire protection services, and the Solar Project would be subject to this payment system. The on-going costs would be determined by the SBCoFD and is unknown at this time. However, costs are commensurate with services provided, and would offset the cost of responding to an incident at the property. Impacts to fire protection services are expected to be less than significant.

Residential GPA Impacts on Fire Protection Services

No immediate development is proposed as a result of the Residential GPA. Upon build out of the Residential GPA, the Project would result in the relocation of 48 homes from the north half of the Project site to the south half of the site. This change would not increase the demand for fire protection services in the City beyond that anticipated in the General Plan, but would result in higher density (1 unit per acre rather than the current one unit per 5 acres) for those homes located at the southwest corner of Samarkand and Noels Knoll Road. These homes would likely be built gradually over a period of years, rather than as a single residential

subdivision; thus, the need for fire protection services would increase gradually as well. According to the City's General Plan Safety Element, all developments within Twentynine Palms are subject to County and State fire codes to reduce the potential for fire to start or spread. When a residential project is planned for this site, the SBCoFD would review the plan and provide project-specific recommendations, including compliance with the Fire Code in place at the time that development is proposed.

Compensation for fire protection services is paid by residents and property owners of Twentynine Palms directly to the SBCoFD. Provision of services is commensurate with growth of the City. Therefore, while an increase in population within the Residential GPA site would increase the demand for fire protection services, the costs of the services would be paid by those residents. Impacts to fire protection services resulting from the Residential GPA would be less than significant.

Solar Project Impacts on Police Protection Services

As the Solar Project facility would be unmanned, the demand for police services would increase only marginally. The entire Solar Project would be enclosed by chain link security fencing topped with barbed wire. Demand for law enforcement services to the Solar Project site would be minimal.

The Solar Project would generate increased property tax, a portion of which would flow to the City's General Fund, which is used to fund police services. Impacts to law enforcement services are expected to be less than significant.

Residential GPA Impacts on Police Protection Services

San Bernardino County Sheriff serves 2.1 million residents with 2,094 sworn officers and 2,114 professional staff. According to the California Department of Finance, the average household size in Twentynine Palms is 2.47 persons, which would result in about 119 residents associated with the Residential GPA. As of the 2020 Decennial Census, the population of Twentynine Palms is 28,065[3] These new residents would result in an increased need for public safety services.

Law enforcement services for the City are funded by the City's property tax revenue. The property tax revenue earned from the units built as a result of the Residential GPA would contribute on-going operational funding and would offset the potential impacts to the provision of police services. Impacts to police protection resources would be less than significant.

[3] US Census Bureau, "2020 Decennial Census, Table P1," https://data.census.gov/table/DECENNIALPL2020.P1?g=160XX00US0680994, accessed March 2025.

Solar Project Impacts on Public Education Services

The Solar Project would be an unmanned photovoltaic electric generating facility and would have no impact on the MUSD. Should any personnel affiliated with the Solar Project construction or operational maintenance move to Twentynine Palms and enroll school-aged children to the local schools, this would result in a very minor increase, if any, in school district enrollment and therefore the impact on public education resources would be less than significant.

Residential GPA Impacts on Public Education Services

Within Twentynine Palms, 38.2% of households have one or more school-aged children under the age of 18.[4] The 48 residential units added to the south side of the Project area would therefore likely include 18 households with school-aged children.

To meet the costs of accommodating additional students, projects proposed under the Residential GPA, consistent with all of the housing units built in the City, would be subject to MUSD developer fees, which are calculated on a square-foot basis. The fee for a residential project would be calculated when a site plan is available. The school developer fees, as stipulated in Government Code §65995 would mitigate any impacts associated with the Project's student enrollments. Impacts would be less than significant.

Solar Project Impacts on Parks, Recreation and Community Services

As described above, the unmanned Solar Project would result in extremely minor, if any, impacts to the City's parks, recreation and community services. Should any workers associated with the proposed Solar Project move to the City, the property tax revenue from the Solar Project would adequately offset the potential impacts on the City's Community Services Department. Impacts would be less than significant. A more detailed discussion of impacts is available in the Recreation Resources Section 2.16. No impacts to the City's recreation and community services are expected.

Residential GPA Impacts on Parks and Recreation Services

Approximately 24% of the City's property tax revenue from the Residential GPA would be allocated to the City's General Fund. Recreational opportunities are funded by the General Fund. As residents populate the Residential GPA Project

[4] US Census Bureau, American Community Survey 5-Year Estimates, Table DP02, https://data.census.gov/table/ACSDP5Y2023.DP02?g=160XX00US0680994, accessed March 2025.

site, potential impacts to the City's recreational and community services would be offset by new property tax contributions. Impacts would be less than significant. A more detailed discussion of impacts is available in the Recreation Resources Section 2.16.

2.15.7 Mitigation Measures

No mitigation measures are recommended for Public Services.

2.15.8 Significance After Mitigation

Impacts will remain less than significant.

2.15.9 Cumulative Impacts

The Solar Project would not directly increase the population of the City. The need for police and fire protection services to the Project site would increase marginally as the site would be unmanned and surrounded by security chain link fencing. The Solar Project would not result in a cumulatively considerable impact to public facilities.

The Project does not propose to build homes on the Residential GPA site at this time. Future build out of the Project site would result in a population increase and an increase for fire, police, educational, and recreational services consistent with the impacts analyzed in the General Plan, since no change in the overall total of residential units would occur. Similarly, other residential projects in the City will also increase the demand for public services. Impacts would not be cumulatively considerable because fees and property tax revenues for those services would be paid from new property tax revenue, paid directly to the SBCoFD by new property owners who need the service, or paid to MUSD at the time of development.

2.16 Recreational Resources

2.16.1 Introduction

This section identifies existing parks and recreational facilities within the City of Twentynine Palms and provides an analysis of potential impacts to parks and recreational facilities that could result from the implementation of the proposed Solar Project and the Residential GPA.

2.16.2 Thresholds of Significance

Based upon Appendix G of the CEQA Guidelines, the proposed Project would significantly affect parks and recreational facilities if it would:

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.

b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

2.16.3 Regulatory Framework

Federal

There are no federal regulations applicable to the proposed Project regarding parks and recreational facilities.

State

Quimby Act

Section 66477 of the California Government Code, the Quimby Act, provides cities and counties with the authority to require, by ordinance, land dedications and/or fee payment for recreational facilities as a condition to the approval of tract and parcel maps. The Quimby Act outlines a number of standards that the local ordinance code must fulfill, which include a calculation metric to determine the amount of land or fee that must be provided for recreational purposes. In addition, the dedications and fees can only be used for creating or rehabilitating recreational facilities, and the city/county must develop a timeline for construction of the facilities. The Act also establishes a standard ratio of dedicated park area within a city to the number of residents. Based on the

average number of people per household and an approved or tentatively approved map, the Quimby Act requires a dedication of at least 3 acres of park land and/or cash in-lieu fees for every 1,000 residents generated by a proposed residential project.

Regional and Local

City of Twentynine Palms Community Trails Master Plan

Drafted in July 2014, the City Trails Master Plan provides a planning framework for the development of a trail system, identifies potential opportunities and challenges, illustrates the trail network, and provides design guidelines and implementation strategies for future buildout. The purpose of the Master Plan is to evaluate the current accessibility of trails and propose future development aimed at satisfying the demand for recreational opportunities by the City's population and visitors.

City of Twentynine Palms General Plan

The City General Plan includes a Recreation Element in which the City Parks and Recreation Master Plan is embedded. The Master Plan outlines the City's future plans for recreational infrastructure development, improvement projects, and recreational programs. Additionally, the Element provides a detailed report on the City's existing recreational inventory and establishes goals, policies, and programs aimed at developing parkland, trails, and recreational facilities in service of the community at large. Of these goals and policies, the following are applicable to the proposed Project.

Recreational Element

Goal RE-1	Provide safe, accessible and enjoyable parks and recreation facilities that enhance the community.
Policy RE-1.1	Maintain a level of service of at least 4.2 acres of park land per 1,000 residents and strive for a level of service of 4.8 acres of community park land per 1,000 residents.
Goal RE-2	Create a comprehensive multi-use trail system that connects users to recreational amenities, community gathering spaces, and natural open spaces.
Policy RE-2.4	Encourage developers to provide pathways within their proposed developments to link with the Citywide pathway system.

City of Twentynine Palms Municipal Code

The City Municipal Code reinforces and expands on policies established in the City General Plan such as establishing permitted actions in City parks and recreational facilities as stated in Chapter 11.60 (Use of Public Facilities).

2.16.4 Environmental Setting

The majority of the land within Twentynine Palms is privately owned. Public lands within the City include those owned by the City, San Bernardino County, Twentynine Palms Water District, the Bureau of Land Management (BLM), and the MCAGCC. City-owned public land includes 174.9 acres of parkland, comprised of parks, special use areas, and undeveloped parkland. Additionally, much of the land owned by the BLM within the City is zoned for "Open-Space Residential".[1]

Existing Parkland

Based on the City's 2012 General Plan, the City owns, manages, and operates five parks that total to 72.1 acres. Exhibit RE-1 (Existing Recreational Facilities Map) in the General Plan identifies each facility and its respective location within the City planning area.

- *Luckie Park* is the largest park in Twentynine Palms totaling to 27.4-acres and located at 5885 Luckie Avenue. The park provides a combination of amenities including, but not limited to playgrounds, picnic tables, shade structures, playing fields, horseshoe pits, and a swimming pool.

- *Knott Sky Park* is 19.5-acres in size and located at 6897 El Sol Avenue. The facility provides picnic tables, a large shade structure, playground, baseball field, and playing field.

- *Veteran's Park* is 6.4-acres in size and is part of City Hall located at 6136 Adobe Road. Amenities available at the facility are limited to picnic tables and a lawn.

- *Pioneer Park* is 18.4-acres in size and located at 73637 Sullivan Road. The majority of the park is undeveloped except for the portion occupied by Theatre Twentynine (community theater).

- *Bucklin Park* is 0.4-acres in size and located on the northeast corner of Desert Queen Avenue and Twentynine Palms Highway. The facility consists of picnic tables, shade structures, walkways, desert landscape, an art sculpture and mural.

[1] City of Twentynine Palms Community Trail Master Plan, July 2014.

The Roadrunner Dunes Golf Course is the only golf course in the City, located at 4733 Desert Knoll Avenue. The course occupies 50-acres of recreational space with 44-acres available for further expansion and development. Through an agreement between the private owner and the City of Twentynine Palms, the course is open and available for public use.

Trails

The City has integrated a trail system comprised of multi-purpose pedestrian, equestrian, and bicycle trails. These trails collectively comprise the five connector routes identified by the City General Plan Exhibit RE-2 (Multipurpose Trails Plan with Connector Routes) as providing key connections through the City to regional destinations such as Copper Mountain Community College, the MCAGCC, and the Joshua tree National Park. Connector trails identified by the City are summarized below.

- *Base-park Connection* is a route along Utah Trail which provides a north-south connection from the MCAGCC to Joshua Tree National Park.

- *Center City* is a route that follows the wash flow that crosses the City Downtown area from the south to where the wash crosses Utah Trail to the northeast.

- *Copper Mt College Connection* is a west-east connection route from Utah Trail where additional trail connectors are anticipated to link to Copper Mountain College.

- *Foothill Connection* is the southernmost east-west route in the City and follows the edge of the foothill along the regional mountain range.

- *High School Connection* is a route that allows for nonmotorized access to Twentynine Palms High School located at 5798 Utah Trail.

In addition to collector routes, there is a network of in-town trails that connect existing and future residential areas with destination areas including public facilities and active centers.

Bike Trails

Bike paths within the City Center which are part of the "Safe Route to School" program are limited to residential land uses in proximity to schools so as to provide students with a safe and convenient path to walk or bike to and from school. The routes connect to Twentynine Palms High School and Oasis Elementary School. Bike paths along major and local corridors are also accessible throughout the City circulation system. These bike trails are illustrated in Exhibit RE-3 (Multipurpose Trails Plan with Safe Routes to School) in the City General Plan.

Community Facilities

The City offers a range of community facilities, with each arranging different events and programs in support of the community.

- *Senior Center* is located within the City's Downtown area at 6539 Adobe Road. The facility offers a variety of activities and services for senior citizens including, but not limited to nutritional information workshop, computer class, food distribution, in-home supportive services, senior companion program, bingo, bridge club, and movie showings.

- *Theater Twentynine* is located at 73637 Sullivan Road. The theater is operated by the local community theater group that stage performances throughout the year at Pioneer Park.

- *Community Services Building* is located at 74325 Joe Davis Drive, across Luckie Park to the south. The facility includes a multi-purpose room to hold functions and events, and a room used for host classes.

- *Racquetball Courts* are located in the freestanding building in Luckie Park. The courts are used primarily for racquetball but have been often used for activities such as martial arts.

Marine Corps Air Ground Combat Center

Located on the northernmost region of the City planning area, the MCAGCC includes of a variety of recreational facilities and activities some of which are available to the public. These include, but are not limited to neighborhood parks, baseball fields, outdoor tennis courts, volleyball courts, racquetball courts, swimming pools, a community park, and picnic areas.

Morongo Unified School District

The Morongo Unified School District (MUSD) operates a total of seven educational facilities in Twentynine Palms which include four elementary schools, one junior high, and one high school. Within each of these facilities there are various recreational amenities such as playgrounds, baseball fields, gymnasiums, and football fields, all of which are available for City use through an informal agreement with the MUSD.

Level of Service

The General Plan sets a minimum level of service standard at 4.2 acres of parkland for every 1,000 residents. Under the Community Trail Master Plan, the City established a standard of 3-miles of non-motorized trails per 1,000 residents. Based on the City's 2014 trail system, the City provided approximately 0.43 miles of trail per 1,000 residents. With implementation of the Master Plan, the City is projected to provide 3.5± miles of non-motorized trails per 1,000 residents.

2.16.5 Existing Conditions

The Project's 477± acre property is undeveloped desert lands. There is no existing park, recreational facility, trail or corridor within the Project site. However, there is a proposed multi-purpose pedestrian and equestrian trail designated in the General Plan Recreation Element north of the property that generally extends east to west following a natural water flow starting outside the City boundary at Mesquite Springs Road and continuing through desert terrain to Lear Avenue, from where the trail continues south and crosses the City's southern boundary near Sullivan Road to enter Joshua Tree National Park. In addition, the Copper Mountain College Connection Trail that runs east to west along Two Mile Road is located to the south of the Project site. Beyond trails, the nearest recreational facilities include the Knott Sky Park, approximately 2.51± miles to the southeast, and Twentynine Palms High School, approximately 2.18± miles to the southeast.

2.16.6 Project Impacts

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.

b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Solar Project Impacts

The Solar Project proposes the construction and operation of a commercial solar facility powered by 160,000 PV arrays on the north 184± acres. Construction of the facility would require 100 to 200 workers, who are expected to be from the City or region. As existing local residents, these workers would not increase the demand on parks or recreation facilities in the City. Therefore, construction of the Solar Project would not generate demand for local parks or recreational facilities.

Once operational, the solar facility will be unmanned and monitored remotely, apart from infrequent visits by staff for maintenance services conducted by workers who will come to the facility only for short periods while servicing the site. As such, the facility would not induce population growth or park or recreation service demands. No increase in the use of existing parks or other recreational facilities would occur as a result of the facility's operation.

In summary, the Solar Project's construction and operation are not expected to increase the City population and will not cause the physical deterioration of existing facilities. Additionally, the Solar Project will not require the expansion or construction of new recreational facilities so as to maintain the City's standard of 4.2 acres of parkland per every 1,000 residents. For these reasons, no impact to recreational resources would result from the Solar Project's implementation.

Residential GPA Impacts

No immediate residential development is proposed; however, approval of the Residential GPA would relocate the 48 residential units lost due to the Solar Project to 60 acres located at the southwest corner of Samarkand and Noels Knoll. The land use change would therefore increase the current residential capacity of the southerly portion of the Project site from 71 units to a maximum of 119 units, but the overall residential capacity of the Project site would be unchanged.

Future residential development would not increase the City's housing inventory beyond that already planned in the General Plan. Based on an average household size of 2.47 persons,[2] occupancy of the 119 residential units could directly generate a population growth of 294 new residents, consistent with the City's General Plan projected population size of 103,275 by City buildout in 2032. Future subdivisions to facilitate the development of these units would be subject to conditions of approval stipulating fees and/or parkland dedications, and would also increase property tax revenues to the City. These two factors would allow the City to expand or construct recreational facilities incrementally as new residents' demand increases, at the same levels as currently anticipated in the General Plan.

In accordance with the City's Parks and Recreation Master Plan, the City has identified five potential future park sites and one special use area that would expand access to parks for the City. Exhibit RE-4 (Recreational Facilities Map) in the General Plan illustrates the location of each future recreational facility within the City planning area. The nearest to the southern parcel on the Project site that would include future residential development is P-4. P-4 is proposed as a community park which will provide playgrounds, picnic tables, shade structures, and different sport fields. A community park can vary in size between 5-acres to more than 20-acres. Buildout of P-4 as well as improvement projects proposed by the City's Parks and Recreation Master Plan would allow for the City to increase its level of service in parallel with the City's growing population. Future development of the southern parcel is therefore not anticipated to cause or

[2] CA. Department of Finance, Table 2: E-5 City/County Population and Housing Estimates, 1/1/2024. City of Twentynine Palms.

accelerate the physical deterioration of recreational facilities because the City has structured a development plan to assure continuous access to parks and facilities for its current and future population.

Altogether, there will be no significant impacts to recreational resources associated with the redesignation of 60 acres of the Project site southern parcel from RL-5 to RS-1. The City's Parks and Recreational Master Plan will provide adequate access to parks and recreational facilities to the entire City area, assuming City buildout population. Impacts are expected to be less than significant.

2.16.7 Mitigation Measures

The proposed Project will not have significantly adverse effect on the City's recreational resources and thus, no mitigation measure is required.

2.16.8 Significance After Mitigation

Impacts associated with recreational resources will remain less than significant.

2.16.9 Cumulative Impacts

The proposed Solar Project would operate as an unstaffed solar facility which would not generate a demand for local recreational resources and, in turn, would not result in the substantial or accelerated physical deterioration of parkland or recreational facilities. The proposed Solar Project would not directly or indirectly warrant the construction or expansion of recreational facilities.

Future development of the Residential GPA would result in the same anticipated population growth as in the General Plan, 294 residents, but potential adverse effects to recreational resources would be less than significant with the implementation of conditions of approval, the increase in property tax, and the implementation of the City Parks and Recreation Master Plan and the Trail Master Plan. Access to recreational resources as required by these Plans would apply to all future residential projects and residents in Twentynine Palms, including residents in the Project site southern parcel. Therefore, no substantial or accelerated physical deterioration of parkland or recreational facilities would occur in connection with future residential build out in the City. Additionally, no environmental impacts from the expansion or construction of recreational facilities beyond the City's scope for future development is anticipated to occur. Overall, cumulative impacts associated with recreational facilities will be less than significant.

2.17 Transportation and Traffic

2.17.1 Introduction

This section of the EIR describes the existing transportation conditions within the Project area and analyzes the potential impacts of the proposed Solar Project, General Plan Amendment and off-site improvements on traffic, circulation, and emergency access. The analysis is based on a wide range of data and information, ranging from research and analysis conducted for the General Plan to regional-scale planning and environmental documents.

2.17.2 Thresholds of Significance

According to CEQA Guidelines Appendix G, the Project would have a significant effect on transportation if it would:

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 design feature (e.g., sharp curves or dangerous intersections) or incompatible uses e.g., farm equipment)?

d) Result in inadequate emergency access.

The Initial Study determined that the Project would result in "No Impact" for threshold question c) because the City would condition the Project to build on-site driveways to acceptable standards and at a 90 degree angle to Two Mile Road. Therefore, the Project would not result in an increase hazard or dangerous intersections and as such, no further analysis is required.

2.17.3 Regulatory Framework

Federal
No federal regulation or policy governs transportation services that apply to the proposed Project.

State

Senate Bill 743 (SB 743)
Implemented in 2020 and administered by local governing bodies, Senate Bill 743 changes the practice of evaluating traffic generation impacts by requiring new projects to conduct a transportation impact study in which the vehicle miles traveled (VMT) generated by the project are analyzed in a CEQA review. If the study determines impacts to be significant, the project will be mandated by the local government to prepare a mitigation plan that effectively addresses and implements practices to avoid or minimize impacts.

Regional and Local

Twentynine Palms General Plan
Amended in 2012, the City's General Plan, under the Circulation Element, establishes the City's Street Circulation Plan. The Plan's primary purpose is to state the goals, policies, and standards the City aims to enforce and maintain to secure the adequate service of the local transportation network.

Circulation Element

Policy CI-1.1 Require all new streets to be designed and constructed to maintain a Level of Service C or better.

Policy CI-1.2 Ensure development streets comply with the San Bernardino County Congestion Management Plan.

Policy CI-1.9 Complete design and secure right-of-way for the realignment of Amboy Road, as a future bypass route.

2.17.4 Environmental Setting

Twentynine Palms is connected to surrounding cities by one highway: Twentynine Palms Highway (SR-62). SR-62 is an east-west highway beginning at Interstate 10 (I-10) and continuing east, ending at the California-Arizona state line on the Colorado River.[1] Existing streets within Twentynine Palms vary in improvement and condition. Most of the two-lane streets are paved, as well as SR-62 and Adobe Road. Some streets are unpaved dirt roadways.

The main components to the City's circulation system are roadways, public transit and trails or bike lanes that provide local and regional services.

[1] California Department of Transportation, State Route 62 Embankment Restoration Project, https://dot.ca.gov/caltrans-near-me/district-8/, accessed March 2024.

Roadway System

The Twentynine Palms roadway network is generally based on a grid system with major thoroughfares located half a mile or one mile apart to provide regional connectivity. East/west corridors provide primary circulation linkage beyond the City's boundary. These corridors include SR-62, Two Mile Road, Amboy Road, Indian Trial, and Baseline Road. North/south corridors distribute the local traffic on Adobe Road, Lear Avenue, Utah Trail, and Mesquite Springs Road.

All roadways are classified based on the design, sizing, and anticipated traffic flow from surrounding land uses as proposed by the City General Plan. Roadway classifications include Expressway, Arterial, Secondary, Collector, and Local Street. The following sections define the City's roadway classifications.

- **Expressways:** May accommodate six (6) or eight (8) travel lanes and have raised street medians. These corridors carry a high traffic volume of inter- and intra-city traffic. The primary expressways in Twentynine Palms include SR-62 and Amboy Road.

- **Arterials:** Arterials may accommodate four (4) travel lanes and have raised medians. These corridors carry high intra-city traffic volumes to provide access and connection between expressways and/or arterials. However, most arterial roadways are currently constructed with two (2) lanes.

- **Secondary:** Secondary roadways may accommodate four (4) travel lanes and do not include street medians. These corridors provide regional access to higher classification streets and local streets. Most secondary roadways are currently constructed with two (2) lanes.

- **Collectors:** Collectors may accommodate two (2) lanes of traffic and do not include street medians. These corridors provide a connection between local streets and higher speed roadways. Many collector roads in Twentynine Palms are pending improvements and many of those that have been paved do not meet the full standards of the roadway classification, such as sidewalks and curbs.

- **Local Streets:** Local Streets may accommodate two (2) travel lanes and do not include street medians. They provide connectivity to developed portions of the City and direct traffic from these properties to higher classification corridors. Streets not designated as Expressways, Arterials, Secondaries, or Collectors are Local Streets.

Level of Service

Level of Service (LOS) is a qualitative measure to determine efficiency as it relates to traffic movement. Based on factors such as speed, travel time, freedom to maneuver, traffic interruption, comfort and convenience, and safety, a volume to capacity (V/C) ratio is estimated. The lower the ratio, the better the roadway performance is. Traffic congestion occurs when the number rises and approaches 1.0. Roadway LOS standards and corresponding V/C ratio are listed in Table 2.17-1 as provided by the San Bernardino County Congestion Management Plan.

Table 2.17-1
Definition of Roadway Level of Service

LOS	Volume to Capacity (V/C)	Free-Flow Speeds (mph)	Description
A	0.0-0.6	>35	Free-slowing traffic
B	0.6-0.7	28 to 35	Stable traffic flow
C	0.7-0.8	22 to 28	Stable traffic flow with moderate delays and semi-restricted maneuverability
D	0.8-0.9	17 to 22	Moderate to substantial traffic delays
E	0.9-1.0	13 to 17	Significant traffic delays
F	>1.0	<13	Traffic stream breakdown, stop-and-go movement
Source: San Bernardino County Congestion Management Program of 2007 from the City of Twentynine Palms General Plan EIR, August 2010.			

The updated Twentynine Palms General Plan Circulation Element establishes a LOS "C" or better standard for all new streets within Twentynine Palms.

Truck and Military Routes

Truck routes in the City are limited to major streets located along the City's northern, southern, western, and eastern boundaries as shown in General Plan Exhibit CI-8. Most truck routes are improved with roadway pavement, except for the segment of Amboy Road between SR-62 and Adobe Road, and the segment of Bullion Mountain Road between Twentynine Palms Highway and Amboy Road. Future roadway improvements are proposed by the City Circulation Plan.

The MCAGCC is located north of the City. To avoid circulation conflicts, the City General Plan has designated roadways located along the City's northern, western, and eastern boundary as "Military Convoy Routes," as shown in Exhibit CI-7 of the General Plan. These routes are all improved.

Public Transit System

The Morongo Basin Transit Authority (MBTA) provides public transit services to the Morongo Basin, including Twentynine Palms. In the City, MBTA's services are limited to bus services only. Currently, there are four (4) MBTA bus routes operating throughout the City as shown in General Plan Exhibit 4.16-2 and described in the following section.

- **Route 1:** From the Marine Corps Base to Yucca Valley. Regional route providing service Monday through Saturday.

- **Route 3A:** From the Marine Corps Base to Downtown Twentynine Palms. Local route providing service Monday through Friday only.

- **Route 3B:** Loops around Twentynine Palms. Local route providing service Monday through Friday only.

- **Route 15:** From the Marine Corps Base to Palm Springs. Regional route with service on Friday through Sunday only.

Pedestrian Connectivity

Access to non-motorized transportation systems including sidewalks, bicycle lanes, trail paths, and equestrian trails are limited. In Twentynine Palms only a limited number of sidewalks have been constructed, most of which are found within new residential development or within the City's Downtown area along Twentynine Palms Highway and Adobe Road. When the General Plan was adopted, the City bike system totaled 5.33 miles of Class I Bikeways. More bike lanes have been constructed since then, as well as multi-purpose pedestrian, equestrian, and bicycle trails as shown in Exhibit RE-2 of the General Plan.

Airports

Within the vicinity of the City of Twentynine Palms there is one publicly owned airport, one military airport, and four private airstrips. See Exhibit CI-10 in the General Plan for reference.

The Twentynine Palms Municipal Airport is a public aviation facility operated by the County of San Bernardino. The airport consists of two paved, lighted runways, one of which reaches a maximum length of 5,531 feet. The airport houses sixteen aircraft which include eleven single-engine airplanes, one multi-engine airplane, and four glider airplanes. All general aviation aircraft can be accommodated at the airport as long as the takeoff weight does not exceed 12,500 pounds. On average, inbound and outbound fights constitute 18,000 annual operations.[2] The

[2] City of Twentynine Palms General Plan, Circulation Element, 2012.

Twentynine Palms Municipal Airport is located at 78569 Twentynine Palms Highway, approximately 1.5 miles east of the City's eastern boundary.

The Twentynine Palms Strategic Expeditionary Landing Field (SELF) is a U.S. military airport located on the MCAGCC, approximately 7 miles northwest of the City's north boundary. The airport includes a lighted runway that reaches a maximum length of 8,015 feet. Only military aircraft are allowed at the airport.

2.17.5 Existing Conditions

Roadway System

Major thoroughfares in proximity to the Project site include Two Mile Road (Arterial) located to the south of the property, Lear Avenue (Arterial) to the west, and Sunrise Road (Secondary) to the east.[3] Only Two Mile Road and Lear Avenue are paved. Sunrise Road functions as a dirt road. There is no road north of the property, although Amboy Road is planned for this location. See Exhibit 2.17-1 (Circulation System in Vicinity). An undeveloped portion of Samarkand Drive bisects the Project site, along the southern boundary of the proposed Solar Project.

The City Circulation Plan proposes future buildout and improvement of Samarkand Drive, Amboy Road, and Noels Knoll Road. Once constructed, Samarkand Drive would operate as an east-west, two lane traffic corridor along the Solar Project's southern boundary and include roadway improvements such as paved hardscape, curb and gutter, and pedestrian sidewalks. Amboy Road would operate as an east-west, four lane corridor that borders the northern edge of the Project site to connect to Lear Avenue. Improvements would also include paved roadway, curb and gutter and sidewalks. Noels Knoll Road would operate as a north-south, two lane corridor extending across Two Mile Road and intersecting the Project's eastern region.

Truck Routes

Truck routes in the vicinity of the Project site include Two Mile Road and Lear Avenue. As mentioned above, the Circulation Plan has plans to improve these roadways.

Public Transit System

No bus route provides access to the Project site. The Project is not expected to be accessed via public transportation.

[3] Circulation Element Exhibit CI-1, City of Twentynine Palms General Plan, 2012.

Airports

The Twentynine Palms Municipal Airport located at 78569 Twentynine Palms Highway is the nearest aviation facility to the subject site, at an approximate distance of 12 miles to the southeast.

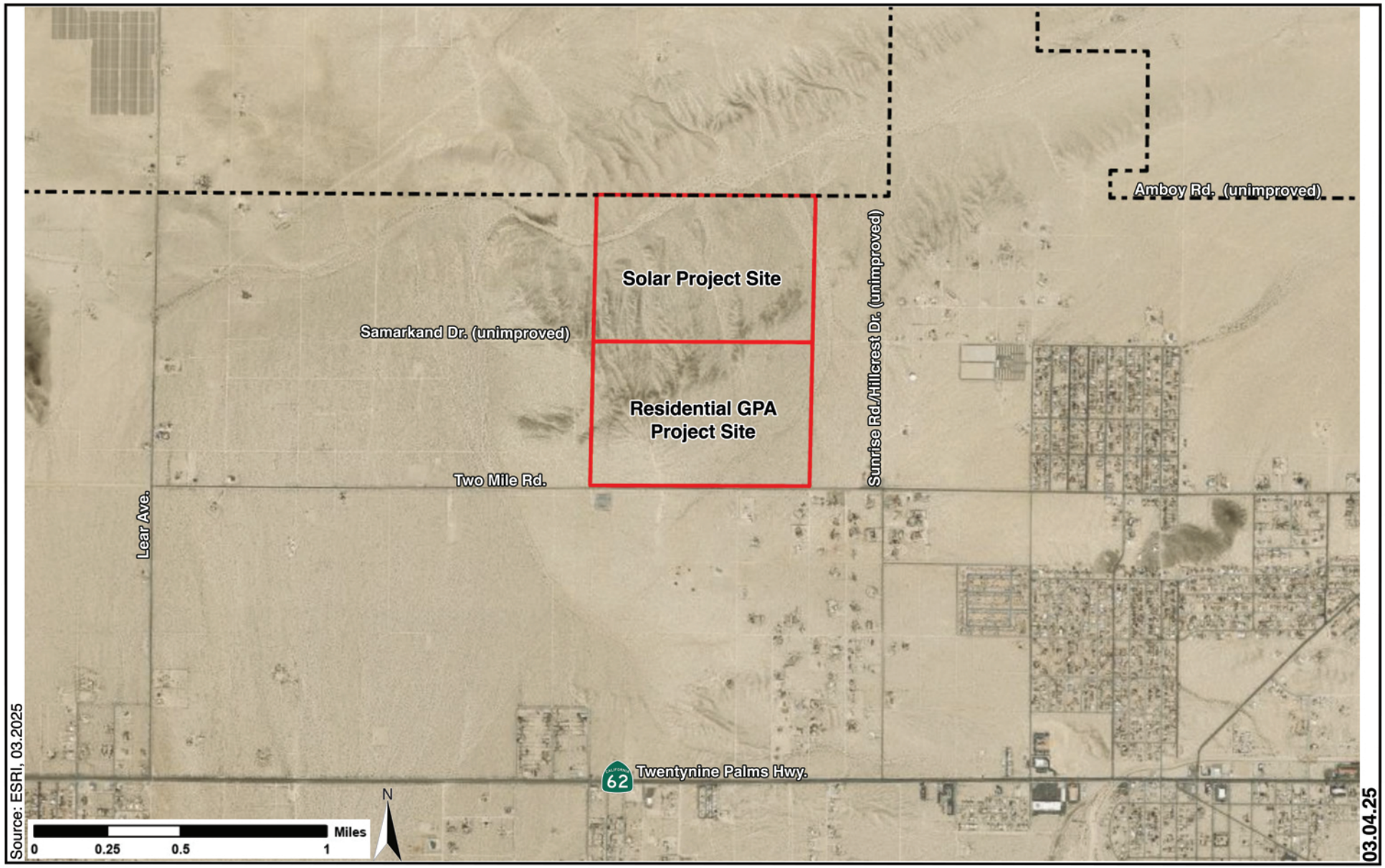
Access Points

The Solar Project proposes the construction of a private driveway with compacted gravel surface, located from Two Mile Road northerly. The driveway will be 26± feet wide and 2,673± feet long and include a prefabricated concrete-supported steel bridge approximately 0.08 miles north from the driveway's intersection with Two Mile Road and Easy Street. The bridge will be 20± feet wide and 40± feet long.

Access to the site would be provided by a gated entrance located off the private driveway. The solar facility will be fenced by a 7-foot high, chain-link fence that runs along the site's perimeter. Only authorized personnel will be permitted to enter the facility.

Compacted gravel service roads provide access throughout the Solar Project and in between on-site equipment. The roads will be 20 feet wide and cross an existing dry wash at "Road C," where a prefabricated steel bridge will be installed above the wash. The bridge will be 20± feet wide and 80± feet long.

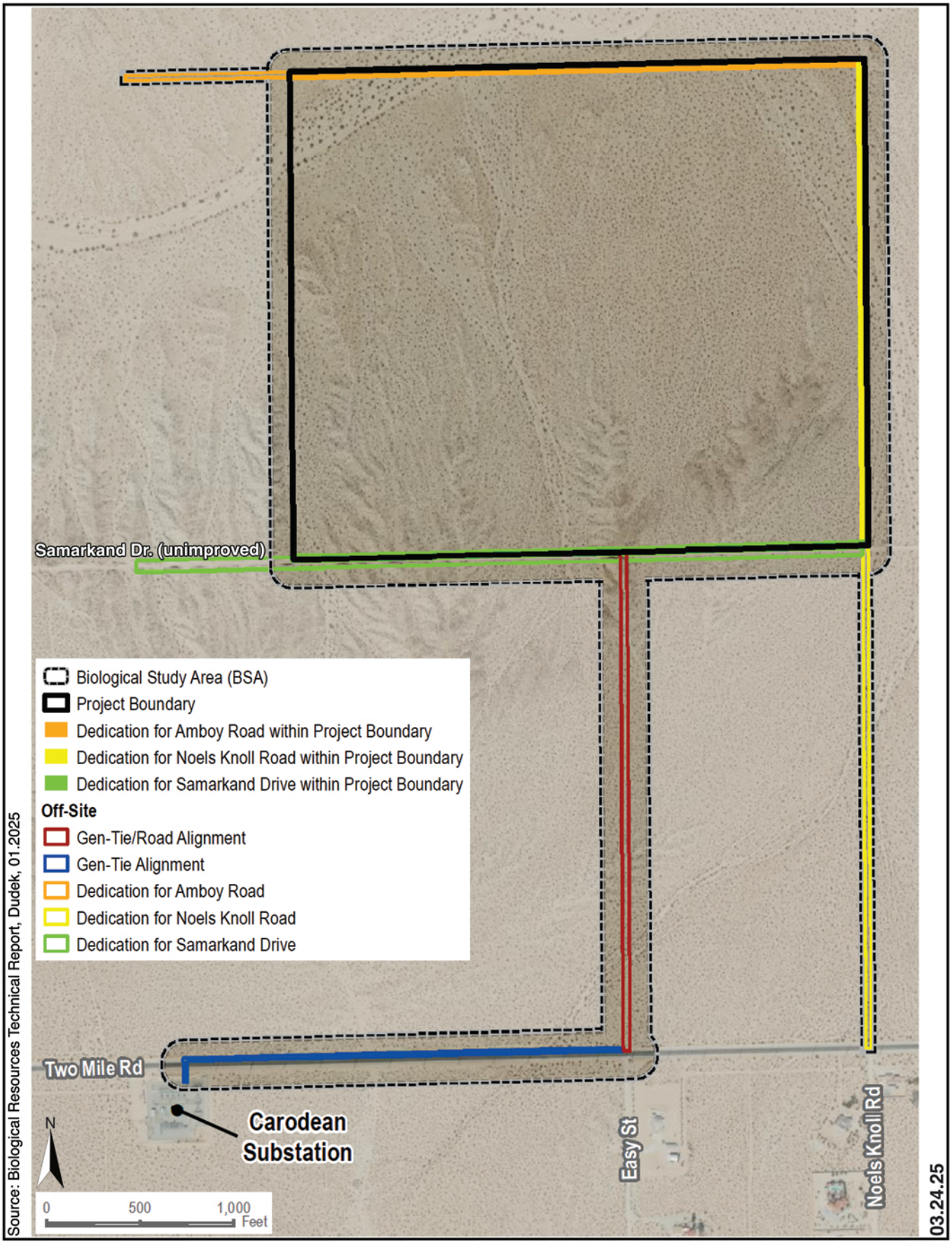
Access points for the future housing which would be constructed under the proposed GPA have not been determined, and would be proposed when subdivision of this portion of the Project is proposed. Generally, residential development would take access from Two Mile Road, Samarkand Drive and Noels Knoll.



TERRA NOVA®
PLANNING & RESEARCH, INC.

Circulation System in the Vicinity
Solar Field Project
Twentynine Palms, California

Exhibit
2.17-1



TERRA NOVA®
PLANNING & RESEARCH, INC.

Roadway Dedications
Solar Field Project
Twentynine Palms, California

Exhibit
2.17-2

2.17.6 Project Impacts

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

Solar Project Impacts

The Solar Project proposes the commercial operation of solar arrays to generate and route solar power to the Southern California Edison's Carodean Substation, located 0.53± miles southwest from the Project site. The use of vehicles will occur primarily during the Project's construction and to a lesser extent during operation.

Construction

The Project construction consists of 3 primary phases including site preparation, installation, and equipment interconnection, occurring over a 9 month period.

Site preparation would involve the use of heavy construction equipment, including but not limited to, excavators, crawler tractors, and graders throughout the site's 184± acre Project area. All equipment will operate within the property boundary and travel along the off-site main driveway. To access the driveway, trucks hauling these construction vehicles are most likely to utilize the City's truck routes located within a 2-mile distance from the property including Twentynine Palms Highway, Lear Avenue, and Two Mile Road. From Two Mile Road, the driveway is accessible to the north and extends for 2,673± feet north to the Solar Project gate.

Workers commuting to the site will also utilize the driveway and main or local corridors depending on if they are from neighboring cities/communities or local to Twentynine Palms. At this phase of development, 100 to 200 workers are expected to occupy the site on a daily basis. There are no public transit stops near the Project area; therefore, it is reasonable to assume that all workers will be traveling via personal vehicles. The influx of 100 to 200 motor vehicles within Twentynine Palms' circulation system is unlikely to significantly affect the traffic flow along these roadways or reduce efficiency and lower LOS to below an acceptable level. All surrounding roadways currently operate at acceptable levels (LOS C or better), and an increase of 100 to 200 vehicles per day would not impact the General Plan LOS policy. Traffic volumes along Two Mile Road were measured at 4,558 daily trips just west of the Project site in 2019.[4] The increase of 100 to 200 vehicles per day would not impact the General Plan LOS policy. Any potential impacts will be temporary and end once the site preparation phase has been completed.

[4] City-wide traffic safety report, 2019 traffic counts, City Engineer's office, City of Twentynine Palms.

During the installation and interconnection phase, delivery trucks, construction and worker vehicles would move to and from the Project site. Delivery trucks would transport construction material as well as equipment including 160,000 solar arrays, steel racks, and prefabricated steel bridges. Construction vehicles will travel to the site but largely remain confined within the property boundary. Worker trips would be similar in scope to the site preparation phase, and consist of 100 to 200 vehicles per day. Trips generated by employees, delivery trucks, and construction vehicles would increase traffic along major thoroughfares within the Project area including Two Mile Road, as well as Twentynine Palms Highway, Lear Avenue. The level of increase would depend on the capacity of each truck relating to solar panels and equipment, daily round trips, and number of daily employees. As described above, impacts are anticipated to be direct but temporary, and less than significant, because existing roadways operate above the General Plan's policy of LOS C. Adverse effects to the City's circulation system by the Solar Project installation and interconnection phase would end when construction work is complete.

Although increases in local traffic will occur, none would have a significant impact or substantially conflict with any policies, plans, or standards as outlined in the General Plan Circulation Element. Construction traffic impacts will be less than significant.

Operation

Upon commissioning, the solar array will operate on an unstaffed basis and will be monitored remotely. Personnel visitation for security, maintenance, and system monitoring will occur infrequently, estimated to occur approximately three times per year. There will be no full-time staff on-site during operation. Given these conditions, the Solar Project is not anticipated to generate a significant volume of daily trips so as to reduce the efficiency of neighboring roadways including Two Mile Road, Lear Avenue, Sunrise Road, and Samarkand Road, below the City's minimum LOS standard. As such, road traffic during the Project's anticipated 35 year operational lifetime would have a negligible impact on the local circulation system and City LOS policy.

Off-site Improvements

The Solar Project's off-site improvements include buildout of a private driveway off Two Mile Road, routing power lines beneath the driveway and along the north side of Two Mile Road, as well as the dedication of 33± feet of right-of-way along the site's north, south, and east boundary for future buildout of Samarkand Drive, Amboy Road, and Noels Knoll Road. The Project does not propose the development of these roadways at this time. See Exhibit 2.17-2 (Roadway Dedication) for visual representation.

Once operational, the Solar Project will be unstaffed and monitored remotely. Visitation will occur infrequently and largely depend on the facility's need for repair and maintenance. Therefore, on-site workers will be limited and in turn, the probability for the site to expose workers to adverse risk from the lack of multiple access points is very low. Furthermore, construction of the private driveway and service roads would be in conformance with the California Building Code Section 503.2.1(2) (Fire Apparatus Access Roads) which mandates driveways and private roadways be at least 12 feet wide. The private driveway connecting at the north side of Two Mile Road will be reinforced and paved with gravel and built to be 26 feet wide. The on-site service roads would also be gravel roads and built to be 20 feet wide. The two prefabricated steel bridges proposed will be 20 feet wide and designed to support 20 tons of weight. These design features provide adequate roadway access to workers at the site in the event of an emergency. Impacts associated with conformance to City off-site improvement requirements are expected to be less than significant with implementation of Building Code standards.

Residential GPA Impacts

The rezoning and land use change would not inherently conflict with any traffic related policies, plans, or ordinances governing new development with respect to the City's circulation system. Future residential development would occur within the southern parcel, at a density somewhat greater than that currently allowed. At the time that development is proposed, a stand-alone CEQA environmental assessment would be drafted in compliance with Section 19.66.050 (CEQA Process) of the City Municipal Code to assess project-specific traffic impacts. The analysis would be supported by a site- and project-specific traffic report which evaluates the project's impact to the surrounding circulation system in context of the development's land use, existing and proposed access roads, estimated trip generation, and LOS at nearby intersections. However, given that surrounding roadways are all predicted to operate at LOS C or better at General Plan build out, impacts of the Residential GPA on the City's LOS policy are not expected to be significant.

Additionally, any future residential project would be required to comply with Twentynine Palms' Circulation Plan, outlining future roadway improvements, pedestrian trails, and public transit routes within the area. Compliance with policies and standards in place at the time that development occurs will assure that impacts to these policies and programs remain less than significant.

b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b).

Solar Project Impacts

The property is located within a rural area of Twentynine Palms' northwestern region. Vehicle miles traveled (VMT) would be influenced by the site's isolation. Nonetheless, VMT are expected to be greater during construction than operation because construction will produce hauling, delivery, and commuter vehicle trips while operation will produce infrequent maintenance-related vehicle trips. The following section outlines the Project's VMT impact for operation based on the County of San Bernardino 2019 Transportation Impact Study Guidelines.

Once operational, the solar facility will be monitored remotely and occasionally serviced on an as-needed basis, estimated to occur approximately three times per year. There will be no full-time staff on-site at any point during the facility's projected 35-year operational period. Therefore, trips generated during this phase are expected to be minimal and not contribute significantly to City VMT. However, length of the trips may be extended, depending on the origination of maintenance trips.

The Project's relative isolation from urban development suggests that most staff members visiting the site for security, maintenance, and on-site monitoring purposes would travel long distances. Some staff members may travel from the nearest Southern California Edison office located at 6999 Old Woman Springs Road in Yucca Valley, approximately 17 miles southwest of the Project site. This travel or any other travel pertaining to the facility will occur a few times a year. Besides these infrequent trips, the site will not generate any VMTs. Per the County Transportation Impact Study Guidelines, projects that generate less than 110 daily vehicle trips may be assumed to cause less than significant impacts and thus are exempt from VMT analysis.[5] Furthermore, the City's General Plan build out VMT is projected to be 29.57 miles daily per trip at build out in 2040. The Solar Project's VMT would be created by a limited number of maintenance or repair trips annually, not on a daily basis, and would not be expected to cumulatively equal the 10,793 miles that one daily trip would generate over a year (29.57 miles x 365 days). The proposed Solar Project would generate far less than the daily VMT threshold and would not cause substantial impacts related to the increase of the local or County VMT. Therefore, the Project's operation would not conflict or be inconsistent with CEQA Section 15064.3 (b) and impacts would be less than significant.

[5] Transportation Impact Study Guidelines, San Bernardino County, July 2019.

Residential GPA Impacts

Redesignation of 60 acres from RL-5 to RS-1 would result in the same number of housing units as allowed under the General Plan, but relocated to accommodate the units lost on the Solar Project. Trips generated by the residential project would therefore remain consistent with those projected by the City General Plan for buildout, because single family residences would occur. These units would be expected to generate the anticipated 29.57 miles daily that is projected for the General Plan, insofar as the Residential GPA would not change the ultimate number of units predicted for the City. It is not known how the residential development allowed under the GPA would occur, but in recent years, development of housing in the City has occurred on a small scale, a few units at a time. Future residential project(s) proposed on the southern parcel would be required to prepare a VMT assessment in conformance with City and County policy, as part of the review of the project(s) under CEQA. The VMT assessment would analyze the residential project's impacts under baseline and cumulative conditions and compare each scenario to the City's most current VMT standards. Because the Residential GPA would not change the number of units allowed in the City under existing General Plan conditions, would not change the pattern of development in this area of the City, and would be expected to meet the City's build out VMT per daily trip, it would not conflict with CEQA Section 15064.3 (b) and thus, impacts would be less than significant.

d) Result in inadequate emergency access.

Solar Project Impacts

Two Mile Road is an emergency evacuation route accessible from the Project site via the extension of the site's main driveway. From Two Mile Road, Sunrise Road is located east of the Project, and approximately 0.98 miles north of Twentynine Palms Highway. Twentynine Palms Highway serves as the primary evacuation route to the west and east in cases of emergency.

During the Project's construction and operation, clear and unobstructed access to these evacuation routes will be provided as required by the conditions of approval for the Solar Project, which will include a construction management plan for circulation. In the case of an emergency, the Fire and Police Departments will have access to the Project site through the private driveway functioning as a compacted gravel road, connecting to the north side of Two Mile Road. Within the fenced solar facility, service roads are proposed throughout the parcel. All these driveways will be constructed to Fire Department weight and width standards. Off-site and on-site roads will provide adequate emergency access and impacts will be less than significant.

Residential GPA Impacts

No residential development has been proposed on the 60 acres at the southwest corner of Samarkand and Noels Knoll at this time. Residential development would use the same evacuation routes as the Solar Project in cases of emergency. Any future development would be required to demonstrate compliance with local safety standards including adequate access to internal roads in the event of an emergency. Compliance with these safety standards will be evaluated by the County Sheriff and Fire Department prior to development. A separate CEQA evaluation would be prepared. As such, no conflict or violations would occur relating to the Residential GPA's implementation of emergency access standards in the future.

2.17.7 Mitigation Measures

The Project's compliance with state and local policies and ordinance codes are sufficient to assure that impacts remain less than significant.

2.17.8 Significance After Mitigation

No mitigation measures are required, and impacts will remain less than significant.

2.17.9 Cumulative Impacts

Programs, Plan, Ordinance or Policy

Under current and future conditions, the Project would not cause cumulative impacts because the Project on-site and off-site improvements are in compliance with applicable state and local standards. Buildout of the residential parcel located south of the Solar Project site would be consistent with General Plan build out, and subject to City policies and standards, as well as the Municipal Code. These same policies and standards are applied to all projects as they are proposed in the City, and would assure compliance with LOS policies, construction standards and emergency access. Impacts associated with City policies and programs would not be cumulatively considerable.

Vehicle Miles Traveled

As discussed in question (b) for Section 2.17.6, the Solar Project's operations as a solar facility generate limited VMTs which are consistent with both the City's definition of a "small project" and the City's daily per trip VMT at General Plan build out. In connection to the Residential GPA, VMT impacts will be consistent with the General Plan, since the same number of units would be built as are allowed under the General Plan currently. Other projects proposed under the General Plan will be evaluated using the same VMT policy as that considered for

the proposed Project, and will be mitigated based on that policy, if required. Projects that are consistent with the City's General Plan build out daily VMT per trip would not result in cumulative VMT impacts, and the Project would not significantly impact VMT at General Plan build out.

Emergency Access

No obstructions to the City's traffic corridors would occur as a result of the Project. The same safety standards would be applicable to future development projects in the area and throughout the City as they are proposed for development. Therefore, the proposed Project would not contribute to cumulative emergency access impacts.

2.18 Tribal Cultural Resources

2.18.1 Introduction

This section evaluates the potential for the proposed Project to result in adverse impacts to Native American tribal cultural resources. Mitigation measures to reduce impacts to a less than significant level are identified, where appropriate. This section is based primarily on the Cultural Resources Inventory and Evaluation Report prepared by Dudek for the Solar Project[1] (Cultural Report), which is available in Appendix E of this EIR, and also on the City of Twentynine Palms General Plan 2012. This section is closely associated with section 2.6, Cultural Resources.

2.18.2 Thresholds of Significance

Tribal Cultural Resources

According to recent Appendix G of the CEQA Guidelines, the Project would have a significant effect on tribal cultural resources if it would:

a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 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

   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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

[1] Cultural Resources Inventory and Evaluation Report for the E-Group PS Solar Project, prepared by Dudek, January 2025.

2.18.3 Regulatory Framework

Federal

There are no federal regulations affecting Tribal Cultural Resources.

State

Assembly Bill 52

Public Resources Code (PRC) 21074(a) states that if a project has the potential to cause a substantial adverse change or impairment to a tribal cultural resource (TCR), then the project may cause an adverse effect on the environment. The passage of Assembly Bill 52 in 2014 created a new CEQA category of resources called, Tribal Cultural Resources, whereby a formal consultation process was established between lead agencies and impacted California Native American tribes to address concerns regarding a project's potential impacts to tribal cultural resources. Public Resources Code (PRC) Section 21074(a) defines tribal cultural resources as:

1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    a. Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

2) 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of the paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

The government-to-government consultation process must begin prior to the release of an environmental impact report, mitigated negative declaration, or negative declaration. Native American tribes participating in the consultation process are those who have requested notice of all proposed projects within the jurisdiction of the lead agency.

Senate Bill 18

For the purpose of protecting Native American cultural spaces, Senate Bill 18 requires local jurisdictions to include California Native American tribes early in land use planning processes. Cities and counties must consult with California Native American tribes prior to the adoption or amendment of a general plan or specific plan or designating land as Open Space. Tribes who are on the Native American Heritage Commission (NAHC) contact list are notified and have 90 days to request consultation.

Local

City of Twentynine Palms General Plan 2012

The Conservation Element contains goals and policies associated with Tribal Cultural Resources, as follows.

Goal CO-2 Identify the City's cultural resources and establish regulations to protect them

Policy CO-2.1 All projects in areas where a previous survey has not been completed in the past five years shall contact the Archaeological Information Center (AIC) for a records search on the project site for potential archaeological or historical resources. The project shall comply with AIC recommendations.

Policy CO-2.2 Develop an archaeological and historical resources database and mapping information to be maintained at City Hall to be used as a basis for review during entitlement processes.

Policy CO-2.3 Identify public and private buildings which are of local, historical, or cultural importance and adopt programs to encourage their preservation and/or reuse.

Policy CO-2.4 Adopt land use regulations which balance cultural preservation of cultural resources when such resources are deemed sensitive and significant by a certified archaeologist.

Policy CO-2.5 Encourage in-place preservation of cultural resources when such resources are deemed sensitive and significant by a certified archaeologist.

Policy CO-2.6 When in-place preservation of sensitive and significant resources is not feasible, require proper recovery and preservation of cultural resources when possible.

Policy CO-2.7 Require onsite monitoring of grading activities when deemed necessary by a certified archaeologist as a result of the cultural resources survey required in Implementation Policy CO 2.1.

Policy CO-2.8 Require special monitoring on development project sites known to contain or a soils analysis indicates the presence of finer-grained fluvial, lacustrine, or aeolian deposits which are sensitive for potentially containing fossilized remains.

Policy CO-2.9 In the event that Native American cultural resources are discovered during project development/construction, all work in the immediate vicinity of the find shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the overall project may continue during this assessment period.

Policy CO-2.10 In areas containing finer-grained fluvial, lacustrine, or aeolian deposits where it is unknown if paleontological resources exist, field surveys prepared by a qualified paleontological professional before grading shall be conducted to establish the need for paleontological monitoring which shall be done upon recommendation by the professional paleontologist and approval by the Community Development Director.

2.18.4 Environmental Setting

Section 2.6, Cultural Resources includes additional details regarding the prehistoric setting of the Mojave Desert region. Included here in the Tribal Cultural Resources section is a more focused explanation of the local Native American tribes that have inhabited the region for over 3,000 years. Please refer to Section 2.6.4 and Appendix E for more information regarding prehistoric and historic eras.

Ethnohistoric Setting

The neighboring ethnographic territories of the Serrano and Cahuilla indigenous groups surround the Project area. The two territories meet in present day Joshua Tree National Park, located approximately 1.8 miles south of Samarkand Drive. The Cahuilla and the Serrano people have lived in the region for over 3,000 years, which places the early rise of these cultures in the Early Late Holocene Period

(4,00-1,500 BP). Members of the Chemehuevi tribe arrived in the Twentynine Palms area circa 1870. The Chemehuevi come from the Southern Paiute territory to the east along the Colorado River.

Serrano (Maara'yam, Yuhaaviatam)
"Serrano" is a Spanish-derived term referring to the Native American people who are associated with the "highlands," or San Bernardino Mountains, but the Serrano are comprised of two distinct clans who are associated with different ecological regions. First, the Serrano refer to themselves as "Taaqtam," which means "People." The Maara'yam clan, which translates to "the People of the Maara," are associated with Morongo desert area, and the Yuhaaviatam clan, or "People of the Pines," live in the San Bernardino Mountains.[2] Serrano territory extends from Tejon Creek in the west, across Joshua Tree National Park to the south, then north along the west boundaries of the Mojave Preserve and includes area north of Baker, California.

Historically, the Serrano organized small villages located where water was available. Hunting local wildlife and gathering seeds, nuts, tubers, bulbs, cacti, grasses, and various stones, provided materials for food, clothing, blankets, mats, shelter, tools, and instruments. Family groups were structured by patrilineal lines and associated themselves with either the Tukum (Wildcat) moiety or the Wahilyam (Coyote) moiety.

The Spanish Mission System began in California in 1776, however, due to the remoteness of their territories in the mountains and deserts, many of the Serrano and Cahuilla remained out of reach of the Mission System until 1819. In 1819 an outpost, or Asistencia, of the San Gabriel Mission was built in the Redlands area and led the way in forcibly removing many of the Serrano people from their mountain territories into nearby missions throughout the 1800s. Most of the Serrano descendants today are affiliated with either the Yuhaaviatam of San Manuel Nation, the Morongo Band of Mission Indians, or the Serrano Nation of Indians.

Chemehuevi
In the Twentynine Palms area, the Serrano and Cahuilla interacted peacefully with the Chemehuevi people who originated further east in Utah, Arizona, and Southern Nevada. The Oasis of Mara, now inside Joshua Tree National Park, was central to Native American tribes in this area due to the available water. First the Serrano and Cahuilla inhabited the site, and later in 1860, the Chemehuevi, settled at the Oasis. Today, the Twentynine Palms Band of Mission Indians, a federally recognized tribe, includes descendants of Chemehuevi.[3]

[2] Native American Heritage Month, City of Riverside, November 6, 2023, https://www.riversideca.gov/press/native-american-heritage-month, accessed April 2024.
[3] Tribal Government, Twenty-Nine Palms Band of Mission Indians, accessed April 2024, https://www.29palmstribe.org.

Cahuilla

The name "Cahuilla" translates to "the master," "the powerful one," or "the one who rules."[4] Traditional Cahuilla territory shares a border with that of the Serrano in present-day Joshua Tree National Park to the north and reaches from the Colorado River to east to the San Jacinto Mountains and the San Gorgonio Pass to the west and includes the Santa Rosa Mountains to the south. Three distinct ecological conditions of low desert of the Coachella Valley, the higher desert of the Pass area, and the higher elevation mountains separated the Cahuilla nation into three geographically distinct groups: Desert Cahuilla, and Western (or, Pass), and Mountain Cahuilla. Today, nine bands of Cahuilla are officially recognized across these three groups.

Like the Serrano, the Cahuilla family groups associated with one of two moieties, the Tuktum (Wildcat) or the Istam (Coyote) and were organized along patrilineal lines. Cahuilla are a Takic-speaking people who traditionally relied on hunting and gathering. Local wildlife and plants for provided food, medicine, and materials needed for clothing, cooking, shelter, and hunting. Acorns, mesquite beans, cacti, pinyon nuts, yucca, agave, and fan palms were commonly used.

The estimated population of Cahuilla prior to European contact is between 6,000 and 15,000 people. European explorers introduced smallpox to the area, and an epidemic in 1863 killed 80% of the population. The population has gradually increased over the last 150 years. Today, Cahuilla are affiliated with nine different bands including: Agua Caliente, Augustine, Cabazon, Cahuilla, Los Coyotes, Morongo, Ramona, Santa Rosa, and Torrez-Martinez.

2.18.5 Existing Conditions

Per CEQA guidelines, Project archaeologists conducted a formal cultural resources inventory for the Solar Project site, however, a cultural resources analysis was not conducted for the Residential GPA site, which is discussed below in greater detail. The cultural resources inventory and evaluation does not include the Residential GPA area, and the Residential GPA will not, in and of itself, result in any development. However, although no historically significant resources were identified on the Solar Project site, based on the findings from the Solar Project site survey, there is potential for tribal historic resources to occur on the Residential GPA site. Future construction of residences on the land could result in potentially significant impacts to tribal historic resources. During the planning stages for these residential structures, the Residential GPA site would undergo the same thorough

[4] The Cahuilla People, Augustine Band of Cahuilla Indians, 2018, https://augustinetribe-nsn.gov/cahuilla-people/#:~:text=The%20Cahuilla%20can%20be%20generally,and%20practiced%20the%20same%20traditions, accessed March 2024

investigation and evaluation of cultural and historic resources that is afforded to the Solar Project site, as required in Mitigation Measure CUL-1, in Section 2.6.

Records Search and Background Research

A California Historical Resources Information Systems (CHRIS) records search for historical and archaeological resources on the Project site and within a one-mile buffer of the Project site was conducted at the South Central Coastal Information Center (SCCIC) located on the California State University, Fullerton campus. The SCCIC is the state's designated repository of historical resources for San Bernardino County. The CHRIS search revealed that seven cultural resource studies have been previously conducted within one mile of the Project site. One study from 2002 intersects the Project site and a as a result, 5% of the Project site property has been previously investigated. In addition, ten resources were previously recorded within one mile of the Project site. Two of these ten resources had been documented as occurring within the Project site boundary. Further investigation of the two resources during the pedestrian Project site survey found that one resource, a prehistoric lithic scatter, was not present and mis-mapped originally. The other resource, an historic era dirt road, had become part of the paved Two Mile Road.

Historic aerial photographs from 1970 to 2020 as well as topographic maps were examined online. The map research showed that the Project site remained undeveloped and untouched while nearby to the east and south some rural housing development occurred. The SCE Carodean Substation appeared in 1994. Two Mile Road was paved in 2005, and Samarkand Drive appeared in 2012. The aerial and topographic maps revealed that no historic-age structures existed on the Project site and Project site has not been historically disturbed.

Sacred Lands File Search

A request was submitted to the California Native American Heritage Commission (NAHC) for a records search of their Sacred Lands File on October 9, 2023. The NAHC is the State's trustee agency for the protection of tribal cultural resources. The NAHC identifies, catalogs, and protects of Native American cultural resources and maintains an inventory of Native American sacred sites on public lands. A response from the NAHC with negative results was received on November 28, 2023.

Tribal Notification and Participation

NAHC provided a list of contacts for fourteen Native American tribes. Initial letters requesting information regarding knowledge of tribal resources potentially occurring on the Project site were sent to fourteen Native American tribes on December 8, 2023. Official NAHC consultation letters pursuant to both AB 52 and SB 18 were sent by the City of Twentynine Palms to the fourteen tribal offices on

March 20, 2023. A total of twenty-eight letters were sent to the below listed tribes. Copies of the letters are provided in Appendix E.

- Agua Caliente Band of Cahuilla Indians
- Augustine Band of Cahuilla Mission Indians
- Cabazon Band of Mission Indians
- Cahuilla Band of Indians
- Los Coyotes Band of Cahuilla and Cupeño Indians
- Morongo Band of Mission Indians
- Quechan Tribe of the Fort Yuma Reservation
- Ramona Band of Cahuilla Indians
- San Manuel Band of Mission Indians
- Santa Rosa Band of Cahuilla Indians
- Serrano Nation of Mission Indians
- Soboba Band of Luiseño Indians
- Torres-Martinez Desert Cahuilla Indians
- Twenty-Nine Palms Band of Mission Indians

Responses to the cultural report request for information included:

- The Augustine Band of Cahuilla Indians stated that they were "unaware of any specific cultural resources that may be affected by the Project."
- The Cahuilla Band of Indians asked to review all cultural materials associated with the Project.
- The San Manuel Band of Mission Indians stated that the Project is located within the Serrano Ancestral Territory and is of interest to the tribe. They also noted that the area "may be sensitive for cultural resources."
- The Agua Caliente Band of Cahuilla Indians requested that a cultural resources inventory be conducted by a qualified archaeologist and that they be provided a copy of the cultural inventory including the pedestrian survey findings. They also requested that an approved Cultural Resource Monitor be present during any ground disturbing activities.
- The Twentynine Palms Band of Mission Indians stated that they are not aware of any Tribal Cultural Resources on the surface in the Project area, however, they noted that resources may lie below the ground surface and may be discovered during construction. They requested a copy of the cultural resources inventory.
- The Morongo Band of Mission Indians requested the following items: a copy of the records search, tribal participation during the pedestrian survey and testing, GIS data files of the Project area, a copy of the geotechnical report, and the Project design from the lead agency.[5]

[5] Cultural Resources Inventory and Evaluation Report for the E-Group PS Solar Project, prepared by Dudek, January 2025.

Pedestrian Field Survey

On December 18 to 20, 2023, an intensive pedestrian field survey of the Solar Project site was conducted by three qualified archaeologists. Transects of ten meters in size were investigated for prehistoric and historic artifacts, indications of cultural middens, and the presence of former structures. Seventeen artifacts were newly identified. Of these, two were prehistoric era artifacts, neither of which demonstrated archaeological value per CEQA standards. None of the remaining 15 isolates, all from the 20th and 21st centuries, qualified as historically or culturally significant. A full account of the field survey and all of the identified resources is provided in Section 2.6, Cultural Resources, and in the Cultural Resources Inventory and Evaluation Report in Appendix E.

2.18.6 Project Impacts

Would the Project:

a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 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

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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Tribal Consultation

As described above, in compliance with AB 52 and SB 18, on March 20, 2024 the City sent letters to 28 individuals representing fourteen Native American tribes. The following provides information regarding the responses.

- The Twenty-nine Palms Band of Mission Indians stated the necessity to ensure that Incidental Take Permits are in place regarding potential desert tortoise takes. The Tribe considers the desert tortoise to be a "sacred and culturally significant animal" and all efforts to mitigate impacts to the desert tortoises on the Project site should be taken. Additionally, the Tribe would like copies of cultural resource and inventory reports.

- The Cahuilla Band of Indians requested a consultation meeting. During the consultation meeting, the Cahuilla Band requested a Tribe-approved monitor during Project ground disturbance.

- The Morongo Band of Mission Indians confirmed that the Project site is located within the traditional use area and ancestral territory of Serrano and Cahuilla people, therefore, they request the following: Project design and mass grading maps; copy of the CHRIS records search of the Project site plus a one-mile buffer; copy of the pedestrian field survey of the Project site conducted in December 2023 by Dudek; GIS shapefiles of the Project site and area of potential effect (APE); a copy of the geotechnical report.

- The Agua Caliente Band of Cahuilla Indians (ACBCI) stated that the although the Project site is not located within the boundary of the ACBCI Reservation, the Project site occurs within the Tribe's Traditional Use Area. Therefore, ACBCI requested a consultation per AB 52 and SB 18 as well as copies of the records search, the pedestrian site survey data, and the EIR and CRMP when these are available. Furthermore, during ground disturbance activities on the Project site, ACBCI requested the presence of an archaeologist meeting the standards of the Secretary of the Interior as well as the presence of an approved Cultural Resource Monitor.

- The Yuhaaviatam of San Manuel Nation (YSMN) requested that a monitoring and treatment plan be completed by an approved archaeologist and disseminated to the YSMN Cultural Resources Management Department. YSMN also requested that an approved archaeologist with regional experience and a YSMN-approved tribal monitor be present during ground disturbance activities and that all ground disturbance activities be monitored adequately.

Solar Project Impacts

Historically or culturally significant resources were not identified on the Project site during the records search and the field survey, however, this does not preclude the presence of resources that may be buried under the surface. The Cultural Report states that the alluvial soils throughout the Project site have a moderate potential for containing cultural artifacts. Given that the 184 acres north of Samarkand Drive will be graded to install a photovoltaic solar field, there is a potential for impacts to occur to buried resources. As such, Mitigation Measure CUL-2, detailed in Section 2.6, Cultural Resources, establishes protocols for the proper identification and treatment of tribal cultural resources that may be uncovered during ground disturbance activities. The implementation of the CUL-2 mitigation measure would ensure that impacts from the Solar Project would be reduced to a level that is less than significant.

Residential GPA Impacts

Future residential development on the Project site where the Residential GPA applies could pose significant impacts to resources that are significant to local Native American tribes who are historically associated with the Project area. The City's General Plan provides policies in the Conservation and Open Space Elements that ensure communication, proper surveying, monitoring and appropriate treatment of Native American artifacts that may occur on or below the surface of the Site. The City's policies are underlined by extensive State regulations that aim to safeguard valuable Native American cultural resources. Since future development on the Residential GPA lands would be subject to CEQA, and since no on-site cultural resource evaluation has been conducted for this land, Mitigation Measure CUL-1 is included in Section 2.6 to assure that cultural resource survey(s) are completed when development is proposed. In addition, and also as required by CEQA, the City will be required to conduct Tribal Consultation under the requirements of AB 52 when these lands are proposed for development. With implementation of CUL-1 and the requirements of State law, impacts to Tribal Cultural Resources associated with the Residential GPA will be less than significant.

2.18.7 Mitigation Measures

Mitigation measures are provided in section 2.6, Cultural Resources, as CUL-1 and CUL-2. The measures ensure that impacts to any resources of significance to California Native American tribes that are unearthed during Project construction are less than significant.

2.18.8 Significance After Mitigation

The Solar Project and Residential GPA would have less than significant impacts on tribal cultural resources with the implementation of mitigation measures CUL-1 and CUL-2.

2.18.9 Cumulative Impacts

Geographically, cumulative impacts to cultural and historical resources include the Solar Project site, the Residential GPA site, the immediate surrounding vicinity, which are located within the traditional use areas of the Serrano and Cahuilla people. The entire Project area includes approximately 477 acres of land, and it would contribute to cumulative impacts if the Project were to adversely impact significant tribal cultural resources. As described above, the City and its General Plan protect tribal resources, and all projects are reviewed under CEQA for

potential impacts to these resources. Future projects developed in the City will be required to undergo Tribal Consultation, and the recommendations of the consulting tribes will be included in mitigation measures and/or conditions of approval for all projects. As a result, cumulative impacts associated with Tribal Cultural Resources are not expected to be cumulatively considerable.

2.19 Utilities and Service Systems

2.19.1 Introduction

This section of the EIR discusses potential impacts to utilities and service systems, including water supply, wastewater and sewer service, storm drainage, and solid waste disposal resulting from implementation of the proposed Project. A wide range of available resources, including the City's General Plan and TPWD and Burrtec published documents and annual reports, have been used in researching and analyzing the Project and its potential effects. These include detailed analysis of existing utility lines and future extensions and/or conditions.

2.19.2 Thresholds of Significance

According to CEQA Guidelines Appendix G, the proposed Project would have significant impacts on utilities and service systems if it would:

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 wastewater treatment provider that 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 Initial Study determined that the Project would result in "No Impact' for threshold question c) above because the solar project would not require septic or sanitary sewer service and therefore, sewer capacity will not be impacted. No further analysis is required in this EIR.

2.19.3 Regulatory Framework

Federal

Clean Water Act

The Clean Water Act (CWA) was enacted by Congress in 1972 and amended several times since inception. It is the primary federal law regulating water quality in the United States and forms the basis for several state and local laws throughout the nation. Its objective is to reduce or eliminate water pollution in the nation's rivers, streams, lakes, and coastal waters. The CWA prescribes the basic federal laws for regulating discharges of pollutants and sets minimum water quality standards for all "waters of the United States."

Several mechanisms are employed to control domestic, industrial, and agricultural pollution under the CWA. At the federal level, the CWA is administered by the U.S. Environmental Protection Agency (USEPA). At the state and regional level, the CWA is administered and enforced by the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCB). The State of California has developed several water quality laws, rules, and regulations, in part to assist in the implementation of the CWA and related federally mandated water quality requirements. In many cases, the federal requirements set minimum standards and policies, and the laws, rules, and regulations adopted by the State and regional boards exceed the federal requirements.

CWA Section 303(d) lists polluted water bodies which require further attention to support future beneficial uses. For each listed water body, the State of California is required to establish Total Maximum Daily Load (TMDL) criteria for the pollutant(s) causing conditions of impairment.

State

California Department of Water Resources

The California Department of Water Resource (DWA) is a state agency responsible for managing and protecting California's water resources. Key responsibilities of the DWA include operating the State Water Project, which delivers water to millions of Californians, maintaining flood control systems, assisting in emergency management to safeguard life and property, ensuring dam safety, and promoting water conservation and climate resilience. DWR also collaborates with local agencies and stakeholders to address challenges like droughts, floods, watershed and river restoration programs, and long-term water security for the state.

Senate Bill 221 (SB 221)

Passed in 2001 and codified in Government Code Section 66473.7, SB 221 requires a county, city, or local agency to establish a condition to any tentative subdivision map that a sufficient water supply will be available to serve the subdivision. The term "sufficient water supply" means the total water supply, including multiple-dry years will adequately meet the projected demands associated with the proposed subdivision, in addition to existing and future land uses such as agricultural and industrial uses. The Bill states the local governing body and local agencies have the responsibility to request verification of the water supply.

California Integrated Waste Management Act (IWMA)

Passed in 1989 as Assembly Bill 939 (AB 939), the Act mandates all local and county jurisdictions and approved regional solid waste management agencies to divert at least 50% of waste products from landfills through waste reduction, recycling, or other plans/programs. Cal Recycle, created by the Act and previously known as the Integrated Waste Management Board, oversees and assists in the development of waste reduction plans that fulfill the mandates of IWMA and subsequent legislation.

In 2007, Senate Bill 1016 (SB 1016) was adopted to build on AB 939 by implementing a per capita disposal measurement system. The new system streamlines and accurately measures the waste production of regional jurisdictions by generating a rate dividing the jurisdiction's reported total disposal of solid waste by its population. The per capita disposal rate does not determine jurisdictional compliance. However, Cal Recycle uses per capita disposal as an indicator from which to evaluate the city, country or agency program implementation and accurately determine whether or not the local performance is in compliance with the 50% waste diversion benchmark.

California Assembly Bill 341 (AB 341)

Enacted in 2012, AB 341 establishes the requirements for a statewide mandatory commercial recycling program. The purpose of the Bill is to divert commercial solid waste that is readily recyclable and reduce greenhouse gas emissions (GHG) from multiple phases of production, including extraction of raw materials, preprocessing and manufacturing, and emissions at landfills due to the decomposition of organic material. Under AB 341, cities are required to implement a commercial solid waste recycling program that appropriately diverts commercial waste from businesses and related facilities. Each jurisdiction must submit a progress report to be reviewed by Cal Recycle, which Cal Recycle evaluates to determine whether the local program is in compliance with AB 341. If found in violation, Cal Recycle can issue a penalty hearing.

California Green Building Standards Code (CalGreen Code)

CalGreen Code Section 4.408.1 (construction waste management) sets a mandatory statewide provision in which 65% of nonhazardous construction and demolition waste must be recycled or salvaged. The residential construction projects subject to Section 4.408.1 are the following:

- Projects that increase the total combined conditioned and unconditioned building area by 5,000 square feet or more;
- Alternatives to existing structures impacting 5,000 square feet or more of total combined conditioned and unconditioned building area;
- Demolition projects when a demolition permit is required.

Section 4.408.2 requires a Construction Waste Management Plan (CWMP) to be prepared prior to the approval of a building permit in which the plan is signed by the owner and in compliance with Items 1 through 5 that showcase the diversion of construction materials away from landfills. The construction waste management plan must be updated as necessary and made available during construction for examination by the city or other enforcing agency.

Regional and Local

San Bernardino County Flood Control District (SBFCD)

The San Bernardino County Flood Control District (SBFCD) is responsible for managing regional drainage within and in the vicinity of Twentynine Palms. The City works with SBFCD to manage local drainages in the City, which are divided between well-defined drainage courses (some have been channelized) and areas of wide sheet flow. Development that may alter the direction of flow onsite are conditioned per standard San Bernardino County practices to maintain the existing site drainage patterns at inlets and outlets.

San Bernardino County Construction Waste Management Plan (CWMP)

Adopted in 2017 and managed by the County's Department of Public Works, Solid Waste Management Division. The San Bernardino County CWMP mandates certain building projects, including low rise residential and most non-residential commercial projects, to conduct a CWMP Estimate and a CWMP Actual in compliance with CalGreen Code 4.408.1. The CWMP Estimate must estimate the amount of tonnage to be disposed and diverted during construction. The CWMP Actual requires the project to showcase the tonnage that was actually diverted and disposed of.

Urban Water Management Plan

Twentynine Palms Water District (TPWD) manages and distributes the local ground water supply in the City of Twentynine Palms and portions of the surrounding

unincorporated areas of San Bernardino County. The District's water service area spans 87 square miles, maintaining 200 miles of pipeline and 17 million gallons of water storage capacity. The District's water supply source is 100 percent local groundwater extracted from four sub-basins south of the Pinto Mountain Fault, which are fed by rainfall in the Pinto Mountains.

As an urban water supplier, TPWD is mandated to prepare an Urban Water Management Plan (UWMP) per the California Water Code, undertaking water supply planning over a 20-year period in five-year increments, by analyzing existing and projected water supply opportunities including recycled water for existing and future demands, in normal, single-dry and multiple-dry years, and implementing conservation and efficient use of urban water supplies.

Assembly Bill 134 (2001) authorizes the TPWD to supply retail water to municipal customers and mandates the creation of a Groundwater Management Plan (GWMP) per Water Code Section 10753, originally established by Assembly Bill 3030 (AB 3030). AB 3030 emphasizes groundwater as a critical resource requiring careful management for safe production and quality, promoting cooperative local management. Senate Bill 1938 (SB 1938), enacted on September 16, 2002, amended and expanded the Water Code provisions from AB 3030. The District's 2014 GWMP incorporates all required and optional elements from SB 1938, AB 359, and AB 3030, as well as components suggested by DWR Bulletin 118. This plan serves as a tool to ensure the District sustains safe, high-quality groundwater resources long-term.

City of Twentynine Palms Municipal Code

Updated in December 2024, the City Municipal Code establishes regulatory mandates all development proposed in the City planning area must adhere to in order to satisfy the preliminary requirements to build and operate within the City of Twentynine Palms. These mandates include development standards as it relates to utility connections, construction waste diversion, and on-site drainage.

City of Twentynine Palms General Plan

Amended in 2012, the City's General Plan lists the Twentynine Palms' objectives, policies, and programs to ensure a healthy and safe community with adequate service of all essential utilities. The following are applicable to the proposed Project.

Land Use Element

Policy LU-7.2 Development shall be sustainable in its use of land and shall limit impacts to natural resources, energy, and air and water quality.

Policy LU-8.3 New development must adequately address wastewater and solid waste disposal.

Conservation and Open Space Element

Policy CO-3.2 Require all new development within the City comply with the local government, regional water district, and state mandates concerning the conservation and treatment of water.

Policy CO-3.7 Enforce regulation and guidelines for the development and maintenance of project-specific on-site retention/detention basins, which implement the NPDES program, enhance groundwater recharge, and complement regional flood control facilities.

Policy CO-3.13 Adopt regulations to require new development to incorporate features into site drainage plans to reduce impermeable surface area, increase surface water infiltration and minimize surface water runoff during storm events.

Policy CO-7.1 Use the City's building codes and development code to encourage sustainable construction practices and the use of energy-saving technology within buildings.

2.19.4 Environmental Setting

Domestic Water System

TPWD is the only water utility provider serving the City of Twentynine Palms. TPWD's boundary encompasses approximately 87 square miles where the TPWD operates and manages approximately 8,250 meter services, 360 miles of pipeline, and 17 million gallons of water storage capacity in 10 reservoirs for a service population of ±18,000.[1] Water demand is met entirely by local groundwater extraction from four (4) subbasins, including the Mesquite Lake, Indian Cove, Forty-nine Palms, and Eastern Subbasins. These groundwater aquifers are naturally recharged by rainfall from the Pinto Mountains.[2] However, the Twentynine Palms Valley Basin (where Mesquite Lake Subbasin is located) is in overdraft condition, meaning that water pumped from the basin occurs at a faster rate than water seeps into the basin to replenish the subsurface water column. TPWD has a total pumping

[1] Twentynine Palms Water District, "Who We Serve", https://29palmswater.com/who-we-serve/, accessed March 2024.

[2] Twentynine Palms Water District, "Facts About Our Water" https://29palmswater.com/facts-about-your-water/, accessed March 2024.

capacity of 7,720 acre-feet per year (AFY) but given the overdraft condition, a maximum of 6,995 AFY is recommended.[3]

In 2020, TPWD's water demand was approximately 2,449 acre-feet (AF).[4] In 2025, water demand increased to 3,048 AFY, a 24.4 percent increase from 5 years prior. By 2045, projected water demand is to reach 3,200 AFY.[5] TPWD maintains an existing and projected water supply of 6,995 AFY through 2045[6], which is almost twice the District's projected water demand.

To support and ensure access to potable water, TPWD adopted the Sustainable Management, Affordability, and Reliability for Twentynine Palms Water District (SMART) Plan in 2017. The SMART Plan identifies potential challenges and proposes actionable solutions to protect the City's water quality and affordability into the future. Additionally, the District's 2020 Urban Water Management Plan (UWMP) proposes infrastructure improvements to meet the projected demand in 2040. The recommended improvements include:

- Additional storage capacity
- Additional extraction facilities including TP-2 production wells
- Development designed to maximize recharge availability from precipitation

Flood Control

The City of Twentynine Palms does not have a community-wide, interconnected storm drain system. The primary method of flood control is to utilize street with concrete or asphalt curbs as a channel to direct stormwater runoff away from developed areas. Drainage on individual parcels take one of two approaches: (1) drainage is directed off-site to undeveloped parcels, or (2) drainage is directed to streets where curb and gutters direct the flow to regional flood control facilities or onto undeveloped land. Drainage flow from the southern half of the City planning area ends at the Twentynine Palms Channel regional drainage facility, the only major drainage structure in the City.

The San Bernardino County Flood Control District (SBCFCD) works with the City to provide regional drainage and flood control infrastructure and maintenance. In Twentynine Palms, the Flood Control District has developed the Twentynine Palms

[3] 2020 Urban Water Management Plan for Twentynine Palms Water District prepared by Kennedy Jenks, June 2021.

[4] Table 2-1: Water Deliveries 2010, 2015 and 2020 (AF) in the 2020 Urban Water Management Plan for Twentynine Palms Water District, prepared by Kennedy Jenks, June 2021.

[5] Table 2-9: Total Projected Water Production (AF) in the 2020 Urban Water Management Plan for Twentynine Palms Water District, prepared by Kennedy Jenks, June 2021.

[6] Table 4-1: Available Water Supplies in the 2020 Urban Water Management Plan for Twentynine Palms Water District, prepared by Kennedy Jenks, June 2021.

Flood Channel that crosses the City's central region to end at the southeast corner of the City boundary, as well as Donnel Basin, Forty-nine Palms Spreading Grounds, and two local watercourses, including the Oasis Creek Channel and the Pinto Cove Creek.[7]

Solid Waste

Burrtec Waste Industries, Inc. (Burrtec) services solid waste in the City of Twentynine Palms. Residential, commercial, and recycling services are provided.

According to the CalRecycle Diversion Program System, the City of Twentynine Palms reported 41 local jurisdictional waste diversion programs in 2023, per the latest reported year.[8] The programs include recycling initiatives such as school recycling programs, residential curbside, as well as business waste reduction programs and specialized waste diversion programs for concrete/asphalt, tires, and scrap metal.

The City disposed of 19,766.59± tons of solid waste in 2023. With a reported population of 25,787 people and employee population of 2,782 people, disposal rates equate to 4.20 pounds per resident per day and 38.90 pounds per employee per day.[9]

Electricity

Southern California Edison (SCE) services most of central, coastal, and southern California, encompassing a service area of approximately 50,000 square miles and a population size of 15 million.[10] SCE supplies power through the use of non-renewable sources including fossil fuel (coal, oil, and natural gas), and renewable sources such as solar, hydro, and nuclear power. SCE is the electricity provider for Twentynine Palms.

7 County of San Bernardino Flood Control District, Map showing San Bernardino Flood Control Facilities,https://www.arcgis.com/apps/mapviewer/index.html?webmap=6ed1bcba6d7c4e14b76cf07593c9875c, updated January 2024.

8 California Department of Resources Recycling and Recovery Database, "Jurisdictional Waste Diversion Program Summary" for Twentynine Palms in 2023, https://www2.calrecycle.ca.gov/LGCentral/DiversionProgram/JurisdictionSummary, accessed January 2025.

9 California Department of Resources Recycling and Recovery Database, "Jurisdictional Diversion/Disposal Rate Detail" for Twentynine Palms in 2023, https://www2.calrecycle.ca.gov/LGCentral/%20DiversionProgram/JurisdictionDiversionDetail/547/Year/2023, accessed January 2025.

10 Southern California Edison, "About Us" https://www.sce.com/about-us/who-we-are/leadership/our-service-territory, accessed March 2024.

Natural Gas

Twentynine Palms is serviced by Southern California Gas Company (SCG) for natural gas needs. SCG encompasses central and southern California and services approximately 21.1 million consumers in more than 500 communities.[11]

Natural gas provided by SCG is primarily produced out of state in New Mexico, west Texas, and Oklahoma, as well as in the Rocky Mountains and Canada.[12] Within San Bernardino County, SCG operates a transmission and high pressure distribution line that crosses the City of Twentynine Palms. The transmission line travels north to south and reaches Twentynine Palms Highway to extend westbound and intercept regional cities/communities including Joshua Tree, Yucca Valley, and Little Morongo Heights. The transmission line is located outside the City boundaries to the north. Local distribution lines provide connectivity to SCG regional infrastructure to service customers including residential, commercial, industrial, and institutional users.

Other Utilities

Spectrum (formerly Time Warner Cable) provides cable services to the City of Twentynine Palms. Verizon provides telephone services. A number of private providers also have cellular service capabilities in the City.

2.19.5 Existing Conditions

The proposed site is 477± acres in size and zoned for residential use under the City General Plan Land Use Map. However, no residential development has occurred within the property and as such, the site is currently undeveloped, vacant desert land. Given the site's unoccupied state, there are no utility connections providing services to the property. Additionally, based on aerial images, the site does not appear to have been significantly modified or altered so as to provide utility connections in service of nearby development. No utility infrastructure development has occurred on-site.

There is minimal development in proximity to the Project site. The following section outlines land uses located within the Project area.

- North: North of the Project site boundary, the land is zoned for residential use (RL-5). No development has occurred. The land is vacant and undeveloped.

[11] Southern California Gas Company Profile, Southern California Gas Company, https://www.socalgas.com/about-us, access January 2025.

[12] Southern California Gas Company Pipeline Basics prepared by Southern California Gas Company, December 2013.

- South: On the south side of Two Mile Road, the land is zoned for residential use (RL-E) which allows residential development at a maximum density of 1 dwelling unit per 0.4 acres. There are several single-family residential lots widely spaced throughout the area.

- West: On the west side of Canyon Road, the land is zoned for residential use (RL-5). No development has occurred. The land is vacant and undeveloped.

- East: On the east side of Sunrise Road, the land is zoned for residential use (RL-5 and RL-E). The area is partially development with most development occurring north of Samarkand Drive and within the RL-5 zone. These residential units are allowed at a maximum density of 1 dwelling unit per 0.2 acres. There are several single-family homes throughout, in addition to a local cemetery and a congressional church.

These existing structures are connected and serviced by local utility providers, including domestic water, solid waste, electricity, natural gas, cable, and telecommunication services. No sewer collection or treatment services are offered or available to residential and nonresidential development in the area or in the City. Local homes are required to operate on-site septic systems.

Additionally, nearby utility infrastructure includes an aboveground water reservoir near the southeast corner of Sunrise Road and Samarkand Drive, and power lines along Sunrise Road and Two Mile Road. Southern California Edison operates a transmission network at Carodean Substation located on the south side of Two Mile Road and east of Canyon Road.

Domestic Water System

The Project site is located within the Mesquite Lake Subbasin region, part of the TPWD service area.[13] Water pumped from the Mesquite Lake Subbasin occurs at the Water District's TP1 production well and is then transferred to the Fluoride Removal Water Treatment Plant where the water is treated to remove fluoride to below the Maximum Contaminant Level (MCL) (3 mg/L) before being delivered to local customers.

Based on TPWD groundwater pumping projections, the District estimates to withdraw 1,528 AFY of groundwater from the Mesquite Lake Basin in 2025. Water pumping would increase to 1,806 AFY by 2045 which indicates a 18.2% increase over a 20-year period (2025 to 2045).

[13] Figure 4-1: District's Groundwater Subbasin and Wells in the 2020 Urban Water Management Plan for Twentynine Palms Water District, prepared by Kennedy Jenks, June 2021.

Solid Waste

The Project is located within Burrtec's service area. Burrtec services Twentynine Palms with solid waste collection and treatment services. Solid waste collected by Burrtec is disposed of at the Twentynine Palms Transfer Station, located at 7050 Pinto Mountain Road, approximately one mile east of the City's eastern boundary. Waste taken to the Twentynine Palms Transfer Station is processed and ultimately disposed of at the Landers Landfill, located in the unincorporated community of Landers, approximately 30 miles northwest of the City. Twentynine Palms Transfer Station has a permitted throughput of 1,200 tons per day. Landers Landfill had a remaining capacity of 13,983,500 cubic yards and is estimated to close in 2072.

Flood Control

Existing dry washes are located on the site's central, northeast and northwest quadrants and extend southward, running across the two Project parcels. No man-made flood control facilities occur in the area, and flood waters currently occur as sheet flow.

Electricity and Natural Gas

Southern California Edison provides electric service to existing development surrounding the Project site.

The Residential GPA component of the Project may result in natural gas appliances for domestic use. Buildout of the Solar Project does not include equipment fueled by natural gas.

Other Utilities

Spectrum and Verizon are telecommunication providers that could service the Project site.

Security on-site will include CCTV cameras which may require a Wi-Fi connection to provide live footage. The number of cameras on-site and whether Wi-Fi connection will be necessary is unknown at this time.

2.19.6 Project Impacts

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.

Solar Project Impacts

Domestic Water System

The Project proposes buildout of a 184± acre solar array with no supporting facilities or outdoor water features. The Project is designed so as to require limited maintenance. During operation, the Solar Project would be an unmanned facility monitored remotely and routinely cleaned by a water-free cleaning robot. Water demand on-site will be limited to dust control efforts during construction and the occasional transport of water to clean the solar panels after a major sandstorm. Both these functions will be implemented by trucking water to the site.

The Solar Project site requires revegetation, consistent with Mitigation Measure BIO-1, in Section 2.5, Biological Resources. In addition, native plants may be relocated on-site, as required in Mitigation Measure BIO-10. Revegetation is addressed in the Solar Project's Habitat Restoration Plan (Appendix D.3), which specifies the collection of seeds from native plants onsite, supplemented by purchased seed. This seed restoration is not anticipated to require watering, but will be subject to the recommendations of the Project biologist. Native plant relocation may require watering, as recommended in Appendix D.1, the Biological Resources Technical Report, when the plants are transplanted, but not in the long term. Similar to dust control and site maintenance, water required for such uses would be trucked into the site and will not utilize the City domestic water supply. Other than these two programs, the Project does not include any landscaping.

Construction

Construction is expected to occur over a 9 month period and consist of 3 primary phases: site preparation, installation, and equipment interconnection.

Site preparation would include grading the property to level the surface, which involves the removal of desert vegetation that previously stabilized the soil. Considering the change in the soil's stability and increased likelihood for wind erosion as a result, the Project's construction would be required to comply with the MDAQMD's dust control mandate (Rule 403, see Section 2.4) which prohibits construction activity to cause significant fugitive dust. The rule requires all construction activities to implement dust control measures to minimize emissions. These methods may include site watering, vegetation cover, wind breaks, and/or chemical soil stabilization. The required dust control plan will establish construction dust control measures.

Water use during construction will be minimal, temporary, and supplied by water trucks. Ongoing water demand will not result, and the water used for site preparation and dust control will be absorbed into the site and eventually

returned to the groundwater basin. Impacts associated with construction water demand are expected to be less than significant.

Operation

Once operational, the Solar Project site will include 160,000 solar panels and supporting infrastructure in service of the facility. No water service to the site is proposed. The site will be unstaffed and monitored remotely, and will require trucked water for the cleaning of solar panels after a significant wind storm.

In relation to routine maintenance, the solar panels will include a water-free robot that will periodically clean the panels of dust and debris. The only source of water use would occur after a major sandstorm event. A water truck is expected to bring water to the site under these conditions, and pressure wash each panel. Based on research conducted by American Polywater on water consumption as it relates to cleaning PV panels, an estimate of 3.5 liters (L) of water is needed for soaking and rinsing each panel.[14] Given that the site will consist of 160,000 panels and assuming 3.5 L of water is required per panel, the total water demand would be 147,936 gallons, or 0.45 AF per cleaning. This water use would only occur after a severe sandstorm. For analysis purposes, it is reasonable to assume that all panels would be cleaned approximately once a year, thus generating an operational water demand of 0.45 AF. The Solar Project's water demand of 0.45 AFY would account for far less than one percent (0.01%) of the total planned water demand increase of 3,660 AFY by 2045 projected by TPWD. As such, water demand during the Project's long-term operation would not reduce or exceed TPWD's water supply.

In summary, the Solar Project will not generate a daily water demand because the property does not include land uses that are water dependent. The Solar Project will primarily operate without water, except in the event of a severe sandstorm, requiring each solar panel to be cleaned. An annual operational water demand of 0.45 AFY will not cause a significant reduction in TPWD's project water supply for current and future development within the City.

The Solar Project will not require the extension of TPWD's domestic water system to service its water needs. No environmental impact related to the relocation or construction of new utility infrastructure for domestic water service would occur as a result of the Project. Therefore, no impacts are anticipated.

[14] Water Consumption in PV Panel Cleaning Study prepared by American Polywater, accessed January 2025.

Flood Control

According to the FEMA Flood Map, the Project site is in flood Zones X and D, as identified by FIRM panel 06071C8190J. Flood Zone X is described as outside of the 0.2% annual chance floodplain. Flood Zone D is an area of possible yet undetermined flood hazards. Flood Zone X and D in this location have no detailed hydraulic analysis and no base flood elevation information available. Flood Zone D does not mandate flood insurance. Besides the site's low vulnerability to floods, development of the solar facility will ensure natural drainage patterns within the 184± acre site remain relatively undisturbed so as to avoid the potential of increasing the site's susceptibility for floods, as discussed in Section 2.11, Hydrology. Further, the Project proposes to install bridges over the ephemeral streams located on the Project site, thereby avoiding impacts to flow during significant storm conditions. Given the lack of flood control improvements in the City and the Project area, the Solar Project will not generate a need for flood control infrastructure. As such, the property's natural drainage system will not be modified or severely altered at any point in the Project's construction or operation. Implementation of flood control infrastructure to minimize flood related impacts would not be required.

All new projects within Twentynine Palms, including the Project, would be required to comply with applicable standards pursuant to Chapter 19.62 (Flood Management Regulations) of the City Municipal Code. These standards include on-site control of storm flows to assure that they maintain pre-development off-site flows after construction. With implementation of these standard requirements, the Project would not result in a significant change in drainage patterns so as to increase flood risk. Therefore, the Solar Project will not require improvements to either City or San Bernardino County Flood Control District drainage infrastructure to reduce the City's flood hazard. For this reason, less than significant impacts are anticipated to occur by the Solar Project's implementation.

For further analysis on flood control also see Section 2.10 (Hydrology and Water Quality) in this EIR.

Electricity

The facility will be generating renewable energy to be distributed and sold through SCE's energy grid. The facility will generate renewable energy to be distributed and sold by SCE. At buildout, the Project is expected to produce 93 GWH of electricity. Considering the Solar Project would not require electricity in the operation phase, the likelihood for the Project to adversely affect SCE energy supply or require the extension of Edison's existing infrastructure is negligible. The connection to the substation and the improvements required at the Carodean Substation will be installed as part of the Solar Project's construction and will not

cause the addition of other infrastructure. No impacts to Twentynine Palms' SCE infrastructure would be affected as a result of the Solar Project's buildout because the site will not generate an energy demand for electricity.

For further analysis on energy see Section 2.7 (Energy Resources) in this EIR.

Natural Gas

Buildout of the Solar Project does not include equipment fueled by natural gas. Buildout of the Project would not depend on a natural gas connection to SCG local distribution lines. Therefore, the facility will not require the expansion or construction of new service lines to the property. No impacts to the SCG system or capacity would occur.

Other Utilities

The Project may require telecommunication, considering the property will include the use of CCTV cameras for security purposes and remote sensing equipment for solar panels. At this time, the number of cameras and the level of communication services required is unknown. However, these facilities would not represent a significant use of telecommunication capacity and would not significantly impact telecommunication services or cell phone providers. Impacts will be less than significant.

Residential GPA Impacts

Currently, the southern parcel is zoned for residential use (RS-5 and RS-E) which allows for buildout of 71 dwelling units. The Residential GPA would reassign the 48 units lost by construction of the Solar Project to 60 acres of the southern parcel. Assuming buildout of the southern parcel, development of the property would increase the demand for utilities in the area and potentially require the expansion of utility lines to service the area, because of its currently undeveloped nature. However, this development will be consistent with that planned under the General Plan, and will not increase utility use beyond General Plan projections.

The southern parcel of the Project site is currently undeveloped and unoccupied. Based on aerial images, there is no sign of utility infrastructure having been developed within the parcel's 236± acres. In proximity to the property, there are power lines located along the south side of Two Mile Road. Other utility connections such as water lines and natural gas distribution lines may be assumed as occurring underground and in the vicinity of the site given current residential development on the south side of Two Mile Road. The site is located within the service area of all utility providers operating within Twentynine Palms. Therefore, access to utility infrastructure is available to future residential development once a formal project is submitted warranting these improvements.

The residential development on lands south of the Solar Project is anticipated to occur over time, as residential demand warrants. Therefore, no environmental impact related to the relocation or construction of new utility infrastructure or connections would occur in conjunction with the Solar Project. Future residential project(s) on the site would require the installation of new infrastructure within the project(s).

Domestic Water

Domestic water will be required for any residential units built on the southern parcel of the Project site. As described in Section 2.11, the Residential GPA could generate a demand for 13.80 AFY, consistent with General Plan build out in the Project area, since no increase in density would occur (please see Table 2.11-1). The Residential GPA would not change the total planned increase in demand of 3,660 AFY by 2045 predicted by the TPWD, since it is consistent with existing General Plan growth. Domestic water would be transmitted through existing distribution lines and extended into these projects. Impacts associated with water infrastructure will also be reviewed when projects are proposed in the future, and will be required to comply with City and Building Code water conservation requirements in place at that time. Impacts to domestic water infrastructure are expected to be less than significant.

Flood Control

The City requires all development projects to prepare a hydrology study in conjunction with entitlements to ensure site drainage is designed to reduce potential impacts from flooding. The hydrology study must demonstrate that the project proposed can contain the 100 year storm on site through retention, detention or other means; that it manages off-site flows through the site where necessary, and assures that these flows, when exiting the site, do so in a manner consistent with pre-development conditions. These standard requirements will be applied to future subdivision of the Residential GPA parcel to assure that it does not impact existing, or require the construction of additional flood control infrastructure. Impacts to flood control facilities are expected to be less than significant.

Electricity, Natural Gas and Other Utilities

As described above, existing electric, natural gas and telecommunications facilities currently occur in the area surrounding the Residential GPA parcel. The Residential GPA will generate a need for 905.6MWh or electricity (see Table 2.7-3) and 3,723.5 MMBtu in natural gas at build out, consistent with consumption expectations under the General Plan. This usage represents 0.94% of the City's electricity consumption and 1.73% of natural gas consumption. This increase will not significantly impact electric or natural gas infrastructure, and would represent a less than significant impact to this infrastructure.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.

Solar Project Impacts

As discussed in question (a) of this section, the Project's construction and operation will generate a marginal water demand. Construction water use would occur after ground disturbance for dust control, and may be required for native plant transplants. Operational water use would result in a recurring demand of 0.45 AF per year to rinse any sand, dust, or debris from the solar panels after a major sandstorm. The Project's operational water demand would account for 0.01% of the total planned increases in demand of 3,660 AFY by 2045. Impacts on water supplies would be insignificant.

Residential GPA Impacts

The Residential GPA will not, in and of itself, generate any demand for water. Future development of the southern parcel at its maximum capacity would increase water service needs and increase the TPWD's demand for water supply.

The 2020 Urban Water Management Plan assessed the reliability of groundwater resources and determined that TPWD has sufficient water supply to meet projected demands through the end of the 25-year planning period. These future water demands are based on buildout of undeveloped parcels consistent with the designated land use under the City General Plan. The Plan confirms TPWD's access to available water through 2045 under average/normal, single dry and multiple dry years.

The Residential GPA would relocate the 48 units lost on the Solar Project land to the southern parcel, and thus would not change the demand anticipated by the TPWD's Urban Water Management Plan. As shown in Table 2.11-1 in the Hydrology and Water Quality section of this EIR, the Residential GPA would generate an annual water demand of 13.8 AFY, which accounts for approximately 0.89% of the total planned increase in demand of 3,660 AFY by 2045. As described above and in Section 2.11, the TPWD has supply nearly twice what it is projected to require in 2045. Therefore, the Residential GPA water demand will not impact the District's ability to provide water in normal, single dry or multiple dry years, and impacts will be less than significant.

c) 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.

d) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Solar Project Impacts

The Solar Project will generate solid waste during construction, operation, and decommission.

Construction
Construction waste will consist primarily of packaging material, palettes and construction materials. Waste generated during the Project's construction would be required to comply with the City's 50% diversion requirement, which mandates that at least half of all waste material generated from new development be diverted from landfills as detailed in City Municipal Code Section 18.14.020 (Requirements for Newly Constructed Structures). Considering most of the waste generated during construction will be recyclable material, the Project is likely to exceed the 50% requirement and thus contribute minimally to materials disposed at the Landers Landfill.

No impacts from excessive waste generation would occur from the Solar Project's construction.

Operation
At buildout, the facility will be unmanned and monitored remotely. The source of waste would be limited to maintenance services, if and when a solar panel is underperforming or damaged and requires replacement. Typically, commercial solar panels last 25 to 30 years or longer before reaching the end of their functional lifespan and requiring replacement. The Project assumes an operational timeline of 35 years. Assuming some solar panels may become damaged and fail, thus requiring replacement, then the Project would generate waste. New solar panels are generally made of non-hazardous material that passes the Toxicity Characteristic Leaching Procedure (TCLP) test. In addition, solar panels are built with glass, metal, and electrical wires which can be recycled. Solar panels may also be reused, either by direct reuse or after refurbishment. Solar panel replacement would be infrequent, and the waste generated by such a replacement would be conditioned by the City to be removed at the time of replacement. Therefore, replacement of solar panels is not expected to exhaust the waste capacity of Lander Landfill. Less than significant impacts during the Project's operation would occur as it relates to waste generation.

No violation to the City's solid waste reduction initiatives or impacts to local and regional landfills will occur by the Project during construction, operation, nor decommission. No impacts are anticipated and thus, no mitigation measure is required.

Residential GPA Impacts

The Residential GPA on the southern parcel would not directly increase the solid waste generated at the site or limit the site's opportunity to operate in accordance with the City's solid waste reduction standards. Future residential development would be required to operate in conformance with the City's Municipal Code regarding solid waste management. As such, future development on the southern parcel would not conflict or violate applicable plans for solid waste diversion and reduction. No impacts are anticipated to occur.

City residents currently generate about 4.2 pounds of solid waste per day. At build out, the Residential GPA would relocate the 48 units from the Solar Project site, and would not increase solid waste generation beyond that projected under General Plan build out. The total population associated with the 119 units would generate a daily demand of 3,058 pounds per day of solid waste, 50% of which would be required to be diverted for recycling, based on current requirements. Trash generated by the housing units will be hauled to the Twentynine Palms Transfer Station, east of the City, and then transported to Landers Landfill, a regional landfill located approximately 30 miles northwest of the City. The solid waste generated by the Residential GPA is not anticipated to exceed the capacity of the Twentynine Palms Transfer Station or Landers Landfill.

At the time that development is proposed, the City will analyze new residential projects and determine their potential impacts to solid waste based on the standards in place at that time, and will require compliance with all those standards. On that basis, the Residential GPA is not expected to generate significant amounts of waste, impact local landfills, or conflict with laws and standards regarding solid waste management. Less than significant impacts will occur.

2.19.7 Mitigation Measures

Apart from the Project's compliance with state and local policies and ordinances, no mitigation is required to avoid significant impacts to utility services.

2.19.8 Significance After Mitigation

Impacts would remain less than significant.

2.19.9 Cumulative Impacts

The possibility for cumulatively considerable impact by the Project is generally in connection to the southern parcel's buildout for single-family residential use (RS-1) consistent with the proposed Residential GPA. Both components of the Project were analyzed in tandem throughout this section to determine their individual environmental impact. The Solar Project was evaluated and determined to cause no adverse effects to the environment in regard to the construction of utility connections and violation of solid waste reduction policies. Future residential development was assessed based on assumptions and available information and determined to cause less than significant impact in connection to the construction of new utility connection, and potential violations of solid waste reduction policies. Both components were determined to increase current local water demand, but to have less than significant impacts on water supplies through 2045. Future projects in the area surrounding the Project, and the City as a whole, will be required to comply with the same standards and requirements as the proposed Project, and would implement the same water and waste reduction measures currently required of the proposed Project. As a result of these requirements, the cumulative impacts associated with implementation of the Project and all future projects would be less than significant.

CITY OF TWENTYNINE PALMS SOLAR PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT

3. ALTERNATIVE PROJECTS ANALYSIS

3.1. Introduction

While Section 2 provides a detailed analysis of a full range of potential impacts associated with the proposed Project, this section of the EIR addresses the potential impacts associated with the development of alternatives to the proposed Project.

As required by CEQA Guidelines (Section 15126.6), Section 3 sets forth the key objectives that this Project seeks to fulfill. CEQA requires the analysis of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project" (Guidelines, Section 15126.6(c)). This section also states that the EIR "must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation." Therefore, the EIR must only evaluate those alternatives necessary to permit a reasoned choice. The "No Project" alternative must be evaluated. The "No Project" analysis considers the impacts associated with the land remaining in its current condition and what would reasonably be expected to occur if the proposed project was not approved. The alternatives must be limited to only ones that would avoid or substantially lessen any of the significant effects of the proposed project.

An EIR is not required to consider alternatives which are infeasible. Pursuant to Section 15126.6(f)(1) of the CEQA Guidelines, among the factors that may be taken into account when addressing feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the applicant could reasonably acquire, control, or otherwise have access to the alternate site. This section of the EIR describes and analyzes the potential impacts of three potentially feasible alternatives: Alternative 1: No Project/No Construction; Alternative 2: No Project/Existing General Plan; and Alternative 3: Reduced Project Intensity.

To provide a basis for comparison with each of the areas of environmental impact that were analyzed in Section 2, the same resource topics are considered in this section for each alternative.

Where mitigation is required for an alternative and the same mitigation measures required for the proposed Project in Section 2 apply, a reference to the appropriate Section 2 mitigation measures is made. If additional mitigation measures are required for an alternative, the alternative-specific mitigation measures are listed in this section.

3.1.1. Statement of Project Goals and Objectives

CEQA Guidelines Section 15126.6 states that an EIR must describe and evaluate a reasonable range of alternatives to a project that would feasibly attain most of the project's basic objectives, but that would avoid or substantially lessen any identified significant adverse environmental effects of the project. The EIR should also evaluate the comparative merits of the project. Specifically, Section 15126.6 sets forth criteria for selecting and evaluating alternatives. A Draft EIR may support a determination of No Significant Impacts from implementation of the proposed Project with the implementation of mitigation measures set forth in this EIR.

Pursuant to CEQA Guidelines Section 15124(b), the project description includes a statement of objectives. The purpose of the objectives is to assist the City in developing a reasonable range of project alternatives to evaluate in this EIR. These objectives are intended to explain the purpose of the project, and to aid the decision-makers in preparing findings or a statement of overriding considerations, if necessary.

The project objectives identify the purpose of the Project. The City has identified the following list of criteria as the objectives for the Project.

A. Maintain a range of potential housing units consistent with the City's General Plan.
B. Expand the amount of utility-scale renewable energy available to the City and region and reduce local and state dependence on fossil fuels which will support the State of California's renewable energy objectives.
C. Provide the City with a community benefits package which increases City revenue.
D. Assist the City in achieving its General Plan goals of reducing its carbon footprint and supporting sustainable sources of electricity.
E. Develop a project which limits the impact on the land by allowing renaturalization of the property once the project's operations have ended.

3.1.2. Summary of Alternatives

Potential environmental impacts associated with each alternative evaluated in this Section are compared to the impacts of the Project. The alternatives were developed to avoid or minimize impacts associated with implementation of the proposed Project, and in consideration of existing General Plan land use designations.

3.1.3. Alternative 1 – "No Project/No Construction" Alternative

This Alternative assumes that the Project site (477 acres) would remain vacant desert land.

3.1.4. Alternative 2 – "No Project/Existing General Plan" Alternative

Under Alternative 2, the site would develop as currently designated in the General Plan. The result of this Alternative would be the construction of 72 single family homes on the 360± acres of RL-5 designated land, and 47 single family homes on the 117± acres of RS-E land within the Project limits. Under this alternative, the Project area would build out as a standard large-lot subdivision, with improvements to public roadways on all sides, as well as a new internal street system. Although no configuration of lots has been developed, it would be expected that these 119 housing units would develop to City standards in the RL-5 and RS-E zones.

3.1.5. Alternative 3 – "Reduced Project Intensity" Alternative

Alternative 3 would result in 80± acres of commercial solar development on the north half of the eastern parcel, between the City's north boundary and Samarkand Drive. Under this alternative, the solar component would reduce the

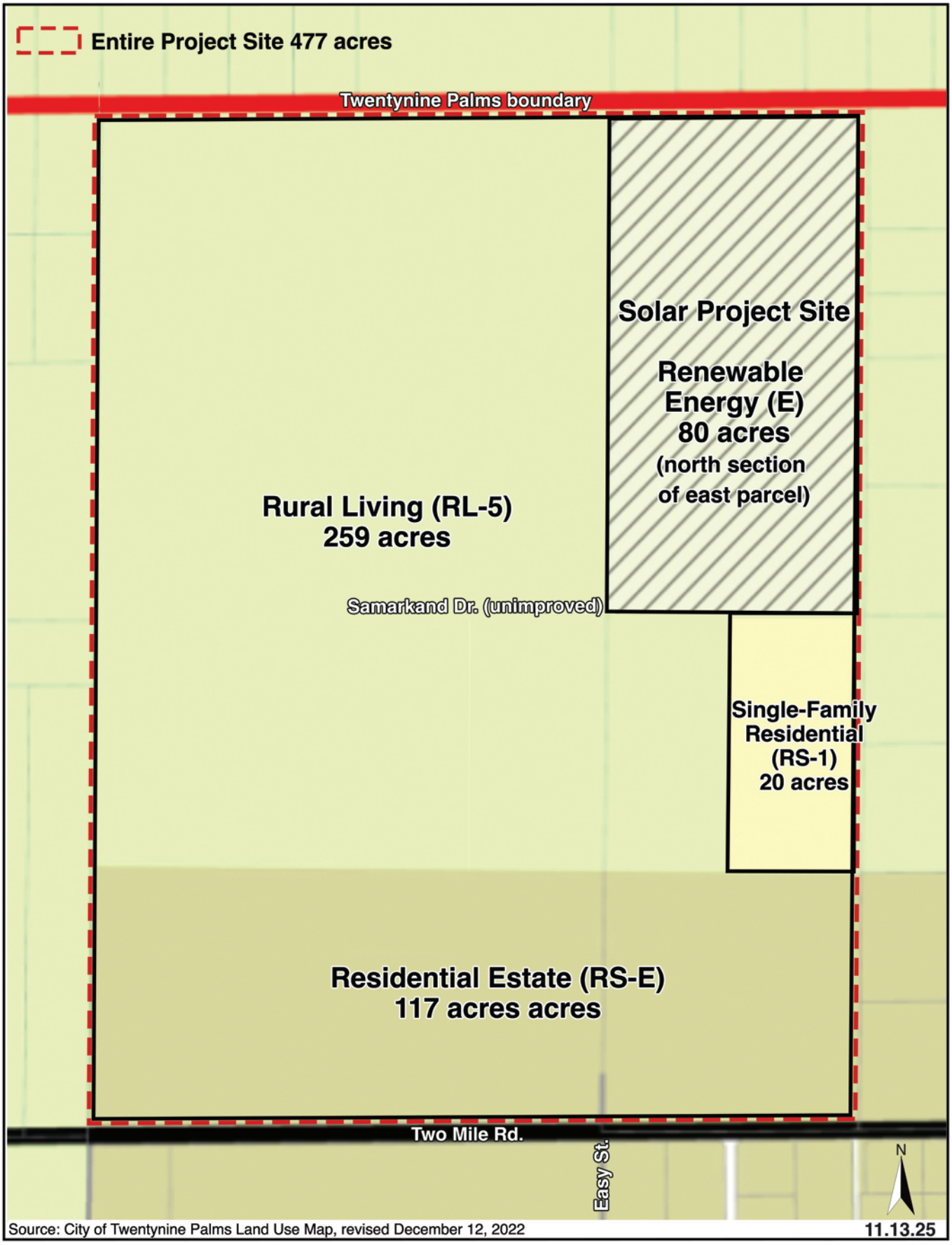
City's residential capacity under SB 330, requiring a General Plan and Zoning map amendment on 20 acres of the southern half of the eastern parcel to Single Family Residential (RS-1), which would generate up to 20 single family homes (see Exhibit 3-1). The western 317± acre parcel would be developed under the current residential designations, and would generate up to 52 single family homes on 259 acres of RL-5 land and 47 homes on 117 acres of RS-E land. Although no lot configuration is known, this alternative would be expected to pave adjacent roadways as part of the residential development, and the 119 residential units would be expected to develop to City standards in the RL-5, RS-E and RS-1 zones.

3.1.6. Other Alternatives Considered But Not Further Analyzed

The Alternative Site alternative was considered, but no alternative site was available for sale or lease or met the Project objectives. The distance to existing substations and site topography made these sites infeasible, and would have resulted in substantially more site disturbance and grading through the extension of much longer gen-tie lines to connect to a substation. Furthermore, the sites were not operationally feasible as they were shaded by surrounding topography and therefore did not provide sufficient irradiation required for utility-scale solar facilities; and the sites would not significantly lessen the visual and aesthetic impacts of the Project. As a result, the alternative was rejected.

3.2. Alternative Projects Analysis Summary

The following sections describe the potential impacts of each alternative on the same environmental issue areas analyzed in Section 2, determines the level of impact for that issue area, and compares these impacts to the proposed Project. After analysis of all issue areas, an environmentally superior alternative is considered.



Source: City of Twentynine Palms Land Use Map, revised December 12, 2022

11.13.25

TERRA NOVA®
PLANNING & RESEARCH, INC.

Alternative 3 Land Use and Zoning
Solar Field Project
Twentynine Palms, California

Exhibit
3-1

3.3 Aesthetics

3.3.1 Introduction

This section of the EIR evaluates potential impacts to aesthetic resources associated with the three proposed alternatives. Aesthetic resources include scenic vistas and the visual character or quality of day and nighttime public views of the site and its surroundings. This analysis considers the visual simulations provided as exhibits 2.3-1 and -2 and the Glare Analysis Report prepared by Dudek.[1]

3.3.2 Existing Conditions

The Solar Project and Residential GPA (together referred to as the Project) are proposed for the northwest rural region of the City of Twentynine Palms. Distant mountain ranges, bajadas sloping into broad valleys, and scattered dry lakes characterize the surrounding vicinity. Local topography, including the Project site, includes vast flat expanses of desert creosote scrub interrupted by ephemeral streams and drainage systems which have resulted in alternating flats and washes throughout the landscape. Low elevation rocky outcroppings, remnants of ancient and eroded mountains dot the panorama. The Project site presents a broad open desert vista from surrounding roadways. As described in Land Use Goal LU-2 and Policy LU 7.4, the natural environment and surrounding hillsides provide important scenic vistas from existing and future neighborhoods.

Surrounding lands are sparsely developed, and include primarily single family homes on larger lots. A cemetery and church also occur in the Project vicinity. The Carodean substation occurs at the south side of Two Mile Road, at the southwestern boundary of the Project area. Electric transmission lines also extend the length of Two Mile Road and along Lear Avenue further to the west. As described in Section 2.3, a planned multi-use trail is mapped in the General Plan immediately north of the site, generally in the area of the future Amboy Road.

3.3.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

[1] "Glare Analysis Report; E-Group PS Solar Project," prepared by Dudek, January 2025.

a) Have a substantial adverse effect on a scenic vista?

Alternative 1: No Project/No Construction

This Alternative maintains the existing conditions on the undeveloped property. There would be no construction, including no construction of single family homes or solar facilities. Scenic vistas would remain unchanged. No impacts to scenic vistas would occur.

Alternative 2: No Project/Existing General Plan

Under Alternative 2, the site would be developed according to the current General Plan designations for the subject property. Residential build out per the General Plan would be consistent with existing nearby residential development. RL-5 requires a minimum lot size of five acres and RS-E requires a minimum lot size of 2.5 acres. As a result, homes would be separated by substantial setbacks, and allow views through the lots to surrounding distant mountain vistas. Homes would be subject to the City's development standards and would not exceed 35 feet in height. Given the distance between the subject property and scenic vista resources, and the wide buffers between the housing structures, impacts to scenic vistas would be negligible. This Alternative would have marginally higher impacts on scenic vistas than Alternative 1, insofar as some structures would be visible in the foreground of distant scenic vistas; and would have equivalent impacts on scenic vistas when compared to the proposed Project or Alternative 2, since structures would occur in the foreground of scenic vistas in all three instances.

Alternative 3: Reduced Project Intensity

Alternative 3 proposes a smaller commercial solar facility and correspondingly less acreage for the higher density residential land use, RS-1, which allows one unit per acre. Current General Plan designations for the remaining property would be maintained. The residential development would be consistent with nearby residential designations and existing structures and would not exceed the height limit of 35 feet. The maximum height of the solar arrays would be seven feet. Under this Alternative, impacts to scenic vistas would be less than significant because residential structures would provide setbacks and separation for views through properties; the solar component would remain about 7 feet above grade; and distant mountain views would still be visible and generally unaltered. This Alternative would have similar, and less than significant impacts on scenic vistas when compared to Alternative 2 and the proposed Project, but would have greater impacts than Alternative 1, insofar as structures would be visible in the foreground of scenic vistas.

c) In non-urbanized 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?

Alternative 1: No Project/No Construction

Existing conditions on the undeveloped subject site would continue. There would be no change to the current visual character and the quality of public views would be remain the same. No impacts would occur. This Alternative results in the least impacts to visual character when compared to the other Alternatives or the proposed Project.

Alternative 2: No Project/Existing General Plan

Alternative 2 would result in the construction of 119 total housing units, an internal street network and improvements to perimeter streets on the 477± acres. Development would align with the current General Plan and would be consistent with adjacent residential neighborhoods as well as with the City's intended development pattern for the region. The subdivision(s) would impact the existing visual character of the Project site by disrupting the continuity and form of the undeveloped landscape. Grading would be limited to the pads and driveways necessary for home construction, and would not clear the entire parcel, as is typical of residential construction in the City. The large lot sizes and expected preservation of native vegetated areas on these large lots would provide expansive buffers between each dwelling unit which would reduce the scale and dominance of the homes, hence reducing impacts to the visual character to less than significant levels. The homes would be expected to be consistent in mass, scale and style as existing homes in the area, and would not be expected to change the residential character of this area of the City. Impacts associated with this Alternative would be less than those associated with both Alternative 3 and the proposed Project, because the more distinct visual impact of the solar array would not occur, and more of the desert landscape within the Project site would remain visible.

Alternative 3: Reduced Project Intensity

Alternative 3 proposes an 80-acre solar facility and 20 acres of RS-1 housing which would result in 20 new homes. The western 317 acres would be developed per the current General Plan designations of RL-5 and RS-E. Under Alternative 3, Solar Project impacts to the visual character of the landscape and quality of public views would occur only on the eastern parcel north of Samarkand Drive and

would avoid most of the drainage channels that primarily occur across the western parcel. This Alternative would also reduce the need for extensive grading for the Solar Project by half. However, like the proposed Project discussed in Section 2 of this EIR, the commercial solar facility for Alternative 3 would still result in significant impacts to the visual character of the 80 acres and would be highly visible from Sunrise Road, as shown in Exhibit 2.3-4, and residential land uses east of Sunrise Road. Unlike the limited grading associated with residential parcels, the removal of vegetation, grading and compaction of the soil, and installation of a field of dark solar arrays would significantly alter the visual character of the landscape and significantly impact the quality of public views of the site. Under this Alternative, the mitigation measures applied to the proposed Project, AES-1 and AES-2, requiring implementation of the proposed Habitat Mitigation Plan and the revegetation of the solar array area with native plants would apply. The visual dominance of the arrays due to their contrasting form and color would, however, significantly and unavoidably impact and degrade the visual character of the site.

The RS-1 residential land uses would occur on 20 acres on the south side of Samarkand Drive and thus would increase the density of housing compared to the General Plan's current densities. As described above, grading for residential units would be required for access roads, home pads and driveways, but would not require clearing as much land as the proposed Solar Project. Future homes would be subject to the City's Development Code, which prescribe height, design and landscaping standards meant to reduce the visual scale and mass of the structures. Homes would therefore be closer together than under the existing General Plan, but would be of similar mass, scale and style, thus reducing impacts to the visual character of the landscape to less than significant levels.

The lower density portion of Alternative 3 would be at densities currently planned in the General Plan, and would be sited on the westerly portion of the Project site further from the City center. Again, the larger lot sizes and buffers between the properties would help create a sense of openness and reduce the visual massing of the residential structures. The Residential portion of the site under Alternative 3 would be consistent with existing land uses and would pose a less than significant impact on the visual character and public views.

This alternative would reduce the impacts to visual character when compared to the proposed Project, insofar as a smaller area of the northern property would be covered by solar panels. However, given that the solar array would occur on the easterly parcel, closest to Noels Knoll Road, Sunrise Road and Samarkand Drive, this Alternative would still result in significant and unavoidable impacts to visual character and public views of the Project site, as does the proposed Project, and would have greater impacts than either Alternative 1 or Alternative 2.

d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

Alternative 1: No Project/No Construction

This Alternative maintains existing conditions on the undeveloped subject site. There would be no new sources of light or glare and there would be no impacts. This alternative has the least impacts on light and glare of all the Alternatives or of the Project.

Alternative 2: No Project/Existing General Plan

Residential land uses will create limited new sources of light and glare. Lighting would be expected to occur outdoors to accommodate security and landscape lighting, as well as lighting on homes to facilitate night-time visibility. The City has established codes to control outdoor lighting with proper shielding to reduce nighttime disturbances and to prevent light and glare from disturbing aircraft. These standards would be applied to future residential construction. In addition, given the substantial separation of homes on 5 and 2.5 acre lots, no concentration of lighting would be expected. This alternative results in somewhat increased but less than significant impacts than the proposed Project, insofar as the Solar Project does not propose lighting. This alternative would result in higher impacts associated with light and glare than Alternative 1, and lower impacts than Alternative 3, insofar as the intensity of residential development would be less on the southeastern parcel, which would limit outdoor lighting.

Under this alternative glare would be reduced, insofar as there would be no Solar Project to cause the glare potential associated with either the Solar Project or the solar component of Alternative 3. Under this alternative, impacts associated with solar panel glare would be reduced. Glare associated with the residential component of Alternative 2 would be reduced to the potential for glare associated with residential units, which would be minimal due to lot size and the scattered nature of the units. Under this alternative, impacts associated with glare would be less than significant, but would be greater than Alternative 1, and similar to Alternative 3.

Alternative 3: Reduced Project Intensity

Under Alternative 3, lighting would be expected to occur in the residential areas outdoors to accommodate security and landscape lighting, as well as lighting on homes to facilitate night-time visibility. The City has established codes to control outdoor lighting with proper shielding to reduce nighttime disturbances and to

prevent light and glare from disturbing aircraft. These standards would be applied to future residential construction. Lighting levels would be similar under Alternative 2, insofar as the increased density on the eastern 20 acres would result in more residential lighting but overall unit counts would be the same. However, residential lighting under this alternative would remain less than significant with the implementation of the City's standards and requirements. This alternative results in marginally increased but still less than significant impacts when compared to the proposed Project, insofar as the Solar Project does not propose lighting.

As explained in Section 2.3.7, the glare impact of a commercial solar field is similar to a body of water. Under Alternative 3, the reduced size of the Solar Project to 80 acres would result in reduced glare effects compared to the proposed Solar Project. Impacts to day and nighttime views resulting from light and glare from the residential development under this alternative would be similar to the impacts associated with Alternative 2, and would be restricted by existing City light shielding requirements. Thus, Alternative 3 is not expected to generate a significant source of light and glare and impacts would be less than significant, and generally similar to the impacts of Alternative 2 or the proposed Project, and higher than the impacts of Alternative 1.

3.3.4 Mitigation Measures

Mitigation measures AES-1 and AES-2, proposed for the Solar Project would apply to Alternative 3, but would be inapplicable to Alternative 1 or 2, which would only develop single family homes on larger lots, and require significantly less grading. None of the Alternatives require the addition of mitigation measures.

3.4 Air Quality

3.4.1 Introduction

This section of the EIR analyzes the potential impacts on air quality resulting from each of the three proposed Project alternatives. Impacts to air quality include obstruction or conflict with an applicable air quality plan, or air emissions that exceed established thresholds, or exposure to substantial pollutant concentrations by sensitive receptors. The following analysis is based upon multiple sources of data ranging from Project-specific research to regional planning and environmental documents. An Air Quality and Greenhouse Gas Report was prepared for the proposed Project and Alternatives and is provided in Appendix B of this EIR.

3.4.2 Existing Conditions

The proposed Project is located in the Western Mojave Desert region of the Mojave Desert Air Basin (MDAB) and is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). MDAQMD is responsible for monitoring criteria air pollutant concentrations and establishing and implementing management policies for the MDAB. All development within the MDAB, including the proposed Project, is subject to all applicable air quality management plans which set forth control strategies and guidance on regional emission reductions for air pollutants, including but not limited to ozone attainment plans and PM_{10} reduction plans. The MDAB is currently designated as an area of severe nonattainment for 8-hour ozone and moderate nonattainment for particulate matter (PM_{10}).

See Section 2.4 for detailed descriptions of the regulatory framework and existing air quality conditions of the MDAB and the City of Twentynine Palms.

3.4.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

a) Conflict with or obstruct implementation of the applicable air quality plan?

Alternative 1: No Project/No Construction

Alternative 1 proposes that neither a commercial solar facility nor any residential units would be constructed on the Project site and existing conditions on the undeveloped 477 acres site would be preserved. There would be no conflict with or obstruction of any applicable air quality plans. No impact would occur.

Alternative 2: No Project/Existing General Plan

Alternative 2 proposes that only residential units would be constructed on the 477-acre site as directed by the City's General Plan. Residential build out would result in the construction of 119 single family homes: RL-5 requires a minimum lot size of five acres and would have 72 homes on 360 acres; RS-E land use requires a minimum lot size of 2.5 acres and would have 47 homes on 117 acres.

As explained in Section 2.4, MDAQMD CEQA Guidelines state that if a project "complies with all proposed control measures that are not yet adopted from the applicable plan(s) and is consistent with the growth forecasts in the applicable plan(s)," then the project conforms to the Guidelines and is not considered to result in significant impacts. The MDAQMD works directly with the Southern California Association of Governments (SCAG), county transportation commissions, and local governments, and cooperates actively with all state and federal government agencies. SCAG's 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (also referred to as Connect SoCal 2024) complies with metropolitan planning organization (MPO) requirements under the Sustainable Communities and Climate Protection Act. Chapter 3 of the Connect SoCal 2024 plan forms the basis of land use and transportation controls of air quality plans. SCAG forecasts show that the City of Twentynine Palms will have 11,700 households by 2050[1] and a population of 33,300 by 2045.[2]

Alternative 2 is consistent with SCAG's growth forecasts for the City. Alternative 2 would add 119 dwelling units and 294 residents to the City and account for 1% of the SCAG growth estimates.[3] Alternative 2 would not conflict with or obstruct

[1] 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Final Growth Forecast by Jurisdiction.

[2] 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Final Growth Forecast by Jurisdiction. The current 2024-2050 RTP/SCS does not provide population projections for 2050.

[3] CA. Department of Finance, Table 2: E-5 City/County Population and Housing Estimates, City of Twentynine Palms, 1/1/2024.

applicable air quality plans and there would be no impact. This Alternative would have lower impacts than either Alternative 3 or the proposed Project relating to conformance with local plans.

Alternative 3: Reduced Project Intensity

Alternative 3 proposes a reduced commercial solar facility of 80 acres to be located on the east parcel (APN 0612-201-05) north of Samarkand Drive. Pursuant to SB 330, twenty of the 80 acres of the east parcel south of Samarkand Drive would be redesignated as a RS-1 residential zone, in order to accommodate the net loss of housing caused by the 80-acre solar facility. The west parcel (APN 0612-201-01) would be developed per current General Plan residential designations. Therefore, a total of 119 housing units would occur under this Alternative, consistent with the residential units resulting from both the proposed Project and Alternative 2. The Solar Project would be reduced in size, but would not increase either housing units or population, and would therefore not have the potential to increase emissions.

Alternative 3 would not conflict with air quality plans because it, like the Project and Alternative 2, it would not increase the total number of units at build out, and would be required to comply with regional air quality policies, Title 24, and enhanced alternative transportation options.

As shown in Tables 3.4-8 and -9, below, Alternative 3 emissions would not exceed MDAQMD project-level thresholds of significance, which were designed to determine if a project will have a significant impact on regional air quality. Because buildout of the site would not result in emission levels that would exceed MDAQMD thresholds, the Project will not conflict with or obstruct the implementation of any air quality plan. Air quality impacts related to violating said plans will be less than significant, but would be greater than the Proposed Project.

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?

Alternative 1: No Project/No Construction

Alternative 1 proposes that neither a commercial solar facility nor any residential units would be constructed on the subject site and existing conditions on the undeveloped 477 acres site would be preserved. There would be no increase in air emissions, nor would areas of non-compliance for ozone or particulate matter be affected. Therefore, no impact would occur.

Alternative 2: No Project/Existing General Plan

Alternative 2 Residential Assumptions

Build out of Alternative 2 would result in the direct and indirect generation of air pollutants during construction and operational phases of 119 single family homes across 477 acres. The same modeling methods and assumptions used for the Proposed Project would apply to Alternative 2 with the exception of the paved street area, which assumes 10% of total site coverage. Emissions were calculated using the California Emissions Estimator Model (CalEEMod) Version 2022.1. The total building square footage was derived from the assumption that the average home size would be 2,000 square feet. The average landscaped yard would also be 2,000 square feet. Per the Institute of Transportation Engineers (ITE) land use code for single family residential, each residence may generate 9.4399 trips per day, for a total of 1,123 daily trips. Table 3.4-1 summarizes the Alternative 2 Project parameters that were applied to CalEEMod.

Table 3.4-1
Alternative 2 Land Use Assumptions for CalEEMod

Residential GPA Land Use	Measurement Data
119 residences	477 AC site total but only 80.7 AC disturbed (33 AC = Residential Footprint; 47.7 AC = Streets)
Building square footage	238,000 SF (2,000 sf per home)
Landscaping	238,000 SF (2000 sf per home)
Area for Streets (asphalt)[1]	47.7 acres
Build out time	2 years 5 months
ITE LU Category 210 Operational Trips[2]	1,123 trips per day

1. Assumes street improvements would cover 10 percent of total acreage.
2. 9.4399 trips per day per dwelling unit according to CalEEMod default ITE trip generation data.

The following CalEEMod default construction timeline used to project emissions:

- Site Preparation: 2/13/2027 – 3/13/2027 (20 days)
- Grading: 3/14/2027 – 5/16/2027 (45 days)
- Building Construction: 5/17/2027 – 4/16/2029 (500 days)
- Paving: 6/1/2028 – 4/17/2029 – 6/5/2029 (35 days)
- Architectural Coating: 6/6/2029 – 7/25/2029 (35 days)
- Roadway Paving: 1/1/27 – 12/4/2028 (500 working days)

Alternative 2 Residential Construction Emissions

Table 3.4-2 below provides the maximum amount of unmitigated daily and annual emissions resulting from the construction of up to 119 single family homes on the Project site over a 2.5-year period. Alternative 2 construction emissions are projected to be below the MDAQMD thresholds and are presumed to be less than significant. Construction activities would not result in a cumulatively considerable net increase of either ozone or PM_{10}, and impacts would be less than significant.

Table 3.4-2
Alternative 2
Maximum Daily Construction-Related Emissions Summary
Daily (pounds), Annual (tons)

Scenario	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Max. Daily Construction Emissions	67	54	43	0.13	13	6.5
MDAQMD Threshold	548	137	137	137	82	65
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**
Total Annual Construction Emissions	6.3	4.5	0.87	0.01	0.69	0.30
MDAQMD Threshold	100	25	25	25	15	12
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix C Air Quality and Greenhouse Gas Report, prepared by Terra Nova Planning & Research, November 2025.

Alternative 2 Residential Operational Emissions

Operational emissions refer to the ongoing emissions over the life of a project after construction is complete. They include area source emissions, emissions from energy demand, and mobile source emissions. Specifically, CalEEMod factors emissions from sources including, but not limited to, space and water heating by natural gas and propane, energy use for electricity, lighting, and appliances, landscaping equipment, distribution of domestic water, treatment of wastewater if sewer is available, solid waste generation, and vehicle trips. Table 3.4-3 shows the resulting daily and annual emissions of Alternative 2 build out on the Project site.

Table 3.4-3
Alternative 2
Unmitigated Maximum Daily Operational-Related Emissions Summary
Daily (pounds), Annual (tons)

Scenario	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Max. Daily Operational Emissions	41	7.2	11	0.09	7.3	2.1
MDAQMD Threshold	548	137	137	137	82	65
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**
Total Annual Operational Emissions	5.6	0.96	1.8	0.01	1.3	0.35
MDAQMD Threshold	100	25	25	25	15	12
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix C Air Quality and Greenhouse Gas Report, prepared by Terra Nova Planning & Research, November 2025.

Alternative 2 Summary

Alternative 2 would not exceed MDAQMD emission thresholds for any criteria pollutant and specifically would not significantly increase emissions of ozone and PM_{10}. Impacts stemming from the build out of Alternative 2 would be less than significant, as would be the impacts of Alternative 3 or the proposed Project.

Alternative 3: Reduced Project Intensity

Alternative 3 Solar Project Assumptions

To analyze potential emissions from Alternative 3, two additional models were run using adjusted solar facility and residential build out parameters. For conservative analysis purposes, certain data from the original Solar Project were retained, such as the 9-acre off-site access road and 1.6-acre utility extension, and other data, such as the cut and fill materials, were adjusted to 50% of the original proposed Solar Project. The amount of construction equipment was also reduced by one-third to one-half depending on the phase and particular equipment. See Table 3.4-4 for an overview of the Alternative 3 solar project data inputs.

Table 3.4-4
Alternative 3 Solar Project
Solar Project Land Use Assumptions for CalEEMod

Solar Project Land Use	Measurement Data
Photovoltaic Generating Station (graded area)	80 AC (3,484,800 SF)
Off-site Access Road	9 AC (392,040 SF)
Utility Extension Along Two Mile Road	1.6 AC (69,696 SF)
Cut and Fill Material	
• Gravel Import Access Roads	7,700 CY fill
• Concrete Import for Footings, Pad	280 CY fill
Construction Time = 3 months	
Operational Field Maintenance	3 vehicle trips per year (300 VMT)

Alternative 3 Solar Project Construction Emissions

Table 3.4-5 below shows the maximum amount of unmitigated daily and annual emissions for the construction of the Alternative 3 solar project over a three-month period, which are expected to be lower than the MDAQMD daily thresholds. The CalEEMod calculations are based on a worst-case scenario where all off-road equipment would be in use simultaneously for the duration of a typical 8-hour workday. With the implementation of mandatory dust control measures imposed by the City and MDAQMD during construction (Rule 403), fugitive dust would be controlled during all ground disturbing activities.

Table 3.4-5
Alternative 3 Solar Project
Maximum Construction-Related Emissions
Daily (pounds), Annual (tons)

Scenario	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Max. Daily Construction Emissions	133.4	30.4	67.2	0.083	2.79	2.0
MDAQMD Daily Threshold	548	137	137	137	82	65
Exceeds Daily Max.?	**No**	**No**	**No**	**No**	**No**	**No**
Total Annual Construction Emissions	3.50	0.93	1.65	0.003	0.08	0.06
MDAQMD Annual Threshold	100	25	25	25	15	12
Exceeds Annual Max.?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix C, Air Quality and Greenhouse Gas Report, prepared by Terra Nova Planning & Research, November 2025.

Alternative 3 Solar Project Operational Emissions

As described in Section 2, the Solar Project would result in an unmanned, remotely monitored facility. Alternative 3 would have the same operational parameters, but be half the size of the Project. The emissions would, similarly, be negligible, as shown in Table 3.4-6.

Table 3.4-6
Alternative 3 Solar Project
Maximum Operational-Related Emissions Summary
Daily (pounds), Annual (tons)

Scenario	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Max. Daily Operational Emissions	0.00	0.00	0.00	0.00	0.00	0.00
MDAQMD Threshold	548	137	137	137	82	65
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**
Max. Annual Operational Emissions	<0.0002	<0.00005	<0.00005	<0.00005	0.0001	<0.00005
MDAQMD Threshold	100	25	25	25	15	12
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix C Air Quality and Greenhouse Gas Report, prepared by Terra Nova Planning & Research, November 2025.

As shown in Table 3.4-5 and 3.4-6, the combined emissions resulting from the construction and operation of the Alternative 3 solar project would be lower than the MDAQMD significance thresholds.

Alternative 3 Residential Assumptions

Table 3.4-7 provides the assumptions for Alternative 3 residential build out where 119 homes would be constructed on 397 acres. The total dwelling unit square

footage of 238,000 was based on an average house size of 2,000 SF along with an average landscaped yard size of 2,000 SF. CalEEMod accounts for the paved driveways, but the paved area for the street network would be approximately 10% of the total acreage, or 39.7 acres. CalEEMod defaults were used for construction equipment and worker trips. Build out time was assumed to be 2.5 years for analysis purposes. Total daily trips generated were estimated to be 1,123. Because no residential construction is currently proposed, it is assumed that construction of residential units would occur after construction of the Solar Project is complete.

Table 3.4-7
Alternative 3 Residential Project
Alternative 3 Residential Land Use Assumptions for CalEEMod

Residential GPA Land Use	Measurement Data
119 residences	397 AC site total but only 72.7 AC disturbed (33 AC = Residential Footprint; 39.7 AC = Streets)
Building square footage	238,000 SF (2,000 sf per home)
Landscaping	238,000 SF (2000 sf per home)
Area for Streets[1]	39.7 acres
Build out time	2 years 5 months
ITE LU Category 210 Operational Trips[2]	1,123 trips per day

1. Assumes street improvements would cover 10 percent of total acreage.
2. 9.4399 trips per day per dwelling unit according to CalEEMod default ITE trip generation data.

The following CalEEMod default construction timeline was used to project emissions:

- Site Preparation: 2/13/2027 – 3/13/2027 (20 days)
- Grading: 3/14/2027 – 5/16/2027 (45 days)
- Building Construction: 5/17/2027 – 4/16/2029 (500 days)
- Paving: 6/1/2028 – 4/17/2029 – 6/5/2029 (35 days)
- Architectural Coating: 6/6/2029 – 7/25/2029 (35 days)
- Roadway Paving: 1/1/27 – 12/4/2028 (500 working days)

Alternative 3 Residential Construction and Operational Emissions

Tables 3.4-8 and 3.4-9 summarize daily and annual construction and operational emissions resulting from the residential build out of Alternative 3. Without a project site plan, this analysis provides a generalized understanding of potential emissions based on a 2.5-year buildout and single-family house and yard size typical for the area. The generalized assumptions suggest that combined emissions from the construction and operation of the residential portion of Alternative 3 would not

exceed the MDAQMD criteria pollutant emissions thresholds and would not significantly contribute to criteria pollutants for which the MDAB is currently designated as nonattainment.

Table 3.4-8
Alternative 3 Residential Project
Maximum Daily Construction-Related Emissions Summary
Daily (pounds), Annual (tons)

Scenario	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Max. Daily Construction Emissions	67	53	43	0.13	13	6.5
MDAQMD Threshold	548	137	137	137	82	65
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**
Max. Annual Construction Emissions	6.2	4.4	0.86	0.01	0.67	0.30
MDAQMD Threshold	100	25	25	25	15	12
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix C Air Quality and Greenhouse Gas Report, prepared by Terra Nova Planning & Research, November 2025.

Table 3.4-9
Alternative 3 Residential
Unmitigated Maximum Daily Operational-Related Emissions Summary
Daily (pounds), Annual (tons)

Scenario	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Max. Daily Operational Emissions	41	7.2	11	0.09	7.3	2.1
MDAQMD Threshold	548	137	137	137	82	65
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**
Max. Annual Operational Emissions	5.6	0.96	1.8	0.01	1.3	0.35
MDAQMD Threshold	100	25	25	25	15	12
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix C Air Quality and Greenhouse Gas Report, prepared by Terra Nova Planning & Research, November 2025.

Alternative 3 Summary

Build out of Alternative 3 includes an 80-acre commercial solar facility and 119 single family residential units within three different residential zoning designations. The construction of the solar facility would occur independently and non-concurrently from the construction of the residences. According to the analysis provided by CalEEMod, neither the 80-acre solar project nor the 119-home residential project under Alternative 3 would exceed mandatory significance pollution emissions thresholds, nor would operational emissions of both components of this Alternative exceed thresholds. There would be no cumulatively considerable net increase of PM_{10} or ozone as well. Therefore,

impacts resulting from Alternative 3 would be less than significant, and similar to those of the proposed Project and Alternative 2.

c) Expose sensitive receptors to substantial pollutant concentrations?

As defined by the MDAQMD, sensitive receptors within the community include residences, schools, daycare centers, playgrounds and medical facilities. To be considered to have a significant impact, a project is evaluated according to MDAQMD significance threshold number 4. The threshold distances that specific project types must be from sensitive receptors, as specified by the MDAQMA, are as follows:

- Any industrial project within 1,000 feet;
- A distribution center (40 or more trucks per day) within 1,000 feet;
- A major transportation project (50,000 or more vehicle per day) within 1,000 feet;
- A dry cleaner using perchloroethylene within 500 feet;
- A gasoline dispensing facility within 300 feet.[4]

Alternative 1: No Project/No Construction

Alternative 1 proposes that neither a commercial solar facility nor any residential units be constructed on the subject site and existing conditions on the undeveloped 477 acres would be preserved. Sensitive receptors would not be exposed to any pollutant concentrations, insofar as no such receptors would occur on the property, and there would be no impact on off-site receptors since no construction would occur.

Alternative 2: No Project/Existing General Plan

The construction of 119 homes under the City's current General Plan residential land use designations would not generate substantial pollutant concentrations as no industrial project, distribution center, major transportation project, dry cleaner or gasoline dispensing facility would occur. Alternative 2 would not expose sensitive receptors to substantial pollutant concentrations or health risks, given the construction of homes will not generate substantial use of heavy equipment. Impacts would be less than significant, and generally consistent with those of Alternative 3 and the proposed Project.

[4] MDAQMD, California Environmental Quality Act (CEQA) and Federal Conformity Guidelines, February 2020, https://www.mdaqmd.ca.gov/home/showpublisheddocument/8510/638591628485530000, accessed April 2025.

Alternative 3: Reduced Project Intensity

The proposed Alternative solar facility is considered to be an industrial land use, but it would be an unmanned electric generating facility and would not emit pollutants known to cause cancer. During the operational phase, mobile emissions would consist of approximately three annual maintenance trips. The nearest sensitive receptor land uses are Rural Living (RL-5) residences to the east, with the nearest residence being over 1,400 feet from the east boundary of the solar facility under this Alternative. Given that the solar component occurs beyond the specified distance from any sensitive receptor land uses, no further evaluation is required by MDAQMD, and impacts would be less than significant.

Alternative 3 proposes to construct 119 units under RL-5, RS-E and RS-1 land uses. As discussed above, residential land uses do not qualify as an industrial project, distribution center, major transportation project, a dry cleaner or a gasoline facility. As such emissions from the build out of the single family homes are not expected to emit substantial pollutant concentrations or result in the use of substantial heavy equipment. Impacts to sensitive receptors would be less than significant, and generally consistent with the impacts of Alternative 2 and the proposed Project.

3.4.4 Mitigation Measures

Compliance with the City's General Plan policies, standard MDAQMD rules and regulations, and California Title 24 regulations will ensure construction and operational impacts on air quality remain less than significant under all Alternatives. No additional mitigation measures are required.

3.5 Biological Resources

3.5.1 Introduction

This section provides environmental analysis of potential biological resources impacts that would result from implementation of Project Alternatives. Each Alternative's potential impact to these resources are discussed and compared to the proposed Project. The following discussion is informed by the Project-specific BRTR appended to this EIR as Appendix D.1, which surveyed a total of 241.3 acres, including the solar portion of the Project. Site surveys were conducted on foot between the month of April 2023 and July 2024; the findings of the survey are included in the BRTR. Also prepared for the Solar Project site and used in analyzing impacts to biological resources was an Aquatic Resources Delineation Report[1] (Appendix D.2), a Habitat Restoration Plan[2] (Appendix D.3), a Burrowing Owl Relocation Plan[3] (Appendix D.4), and a Desert Tortoise Survey Letter Report[4] (Appendix D.5).

3.5.2 Existing Conditions

The Project site (477 acres) is currently undeveloped desert lands, part of a larger and expansive desert terrain encompassing the City's northwest region with minimal development occurring to the south and east, of which largely consists of widely spaced residential dwelling units. The property is underlaid by sandy/gravel soil with natural drainage channels and covered by desert vegetation. The property slopes towards the north and northeast at an elevation ranging from approximately 2,350 to 2,060 feet above mean sea level. The higher elevation is located across the southwestern portion and the lower elevation is near the northernmost portion of the site.

The Project-specific BRTR assessed a 241.3 acre biological survey area (BSA), including the Solar Project site, the off-site area plus a 100-foot buffer zone, and future roadway dedication. Six vegetation communities were identified, of which only the Desert Willow Smoketree Woodland is categorized as a sensitive natural community and found to occur primarily in drainages in the northwest and northeast corner of the site outside of the proposed development footprint.

1 Aquatic Resources Delineation Report for the E-Group PS Solar Project, prepared by Dudek, January 2025.
2 Habitat Restoration Plan for the E-Group PS Solar Project, prepared by Dudek, January 2025.
3 Burrowing Owl Relocation Plan for the E-Group PS Solar Project, prepared by Dudek, January 2025.
4 2025 Desert Tortoise Survey Letter Report for the E-Group PS Solar Project, prepared by Dudek, May 2025

A total of 104 species of native or naturalized plants, including 99 native and 5 non-native, were recorded within the BSA. Twenty-one (21) special-status plant species were reported as occurring in and surrounding the Project site, of which 12 species were determined to have a moderate to high potential to occur within the BSA. However no special-status plant species were observed during field surveys.

A total of 38 wildlife species were observed, of which 17 are bird species, 5 are invertebrates, 5 are mammals, and 11 are reptiles. Twenty-one (21) special-status wildlife species were reported as occurring in the Project vicinity, of which three were observed during field surveys (loggerhead shrike, vermillion flycatcher, and Mojave desert tortoise) and two were determined to have a moderate or high potential to occur within the BSA (burrowing owl and desert kit fox).

The Project site is currently undeveloped land located within the established habitat linkage areas for desert tortoise and burrowing owl that would allow for viable populations of smaller terrestrial species and/or species' dispersal movements through the site and the vicinity.

The results of the aquatic resources delineation concluded there are approximately 7.39 acres of non-wetland waters of the state under the jurisdiction of the RWQCB and streambed or riparian habitat under CDFW jurisdiction within the solar BSA. The Project would have no impact to federally protected wetlands as defined by Section 404 of the CWA.

For a detailed review on existing conditions pertaining to biological resources within the surveyed area, see Section 2.5 (Biological Resources) in this EIR.

3.5.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

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.

Alternative 1: No Project/No Construction

Alternative 1 proposes that neither a commercial solar facility nor any residential units would be constructed on the subject site, instead maintaining the site's existing condition as vacant desert land. As such, there would be no land disturbance associated with construction activities and therefore, there would be no impacts to 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.

Alternative 2: No Project/Existing General Plan

Alternative 2 proposes the development of the site in accordance with existing land use designations pursuant to the City of Twentynine Palms 2012 General Plan. Residential build out would result in the construction of 119 single family homes of 477± acres: RL-5 requires a minimum lot size of five acres and would have 72 homes on 360 acres; RS-E land use requires a minimum lot size of 2.5 acres and would have 47 homes on 117 acres. Although no configuration of lots has not been drafted, the site's development for residential use is expected to consist of the standard large-lot subdivision with each dwelling unit being spatially divided by undeveloped desert lands within their natural state. In addition to residential development, improvements to public roadways and a new internal street system would also be required. All development will comply with the City's Development Code and General Plan policies, as well as state, regional, and local policies governing the protection and conservation of critical habitat for special status species.

Development of the 447± acres under Alternative 2 as a subdivided residential project would likely occur over an extended period with ground disturbance occurring primarily within parcels of 5 acres and 2.5 acres in size for a total of 119 residential units, which reduces the intensity and scale of land disturbance compared to the proposed Project. The proposed Project would disturb 142.2 acres for the proposed commercial solar facility, in addition to the rezoning of 60 acres on the southern site to allow for the potential future development of 119 residential units on 236± acres as opposed to 477± acres. Nonetheless, any development within a rural and largely undisturbed parcel would have potential adverse effects to existing suitable habitat within the area and consequently, potentially reduce the viability of the area to support common and special status species.

As demonstrated by the BRTR, the subject site contains suitable habitat for protected federal and state species including the Mojave desert tortoise, burrowing owl, desert kit fox, loggerhead shrike, vermillion flycatcher and migratory birds due to its relatively undisturbed state and connection with larger undeveloped desert lands.

Development of the site under Alternative 2 would modify and reduce the site's existing natural habitat, resulting in potential impacts to the above referenced species. The species most likely to be impacted would include the Mojave desert tortoise, which was observed to occur on-site, as well as the burrowing owl, where suitable habitat was identified on the site. Nesting birds, including the vermilion flycatcher and loggerhead shrike, which are special status species, may also occur within the property. Although no desert kit fox was observed, the species has a moderate probability of occurrence and therefore, would be subject to potential impact. Consistent with the proposed Project, implementation of Mitigation Measures BIO-1 through BIO-7 would be required to avoid potential impacts to special status biological species under Alternative 2. As such, implementation of mitigation, in addition to compliance with all appliable provisions regarding protection of biological resources in the City Municipal Code and General Plan, would reduce the potential for adverse impacts to less than significant levels. Potential impacts are comparable to that of the proposed Project.

Alternative 3: Reduced Project Intensity

Alternative 3 proposes the development of 80± acres for a commercial solar project, as well as the rezoning of 20 acres of the southern parcel to RS-1. Compared to the proposed Project, Alternative 3 reduces the commercial solar project footprint from 184± acres to 80± acres (57% reduction). On the south half of the eastern parcel, 20 acres would be redesignated RS-1, and the balance would remain RL-5 and RS-E. The west parcel (APN 0612-201-01) would be developed per current General Plan residential zoning designations: 259 acres of RL-5 land use and 117 acres of RS-E land use. This Alternative relocates the units lost to the reduced solar facility, but does not change the overall residential density, which would total 119 units at build out.

Although impacts would be reduced in comparison to the proposed Project, Alternative 3 would still result in temporary and permanent impacts to biological resources identified in the BRTR. Consistent with the proposed Project and Alternative 2, implementation of Mitigation Measures BIO-1 through BIO-7 would be required to avoid potential impacts to special status biological species. As such, implementation of mitigation, in addition to compliance with all appliable provisions regarding protection of biological resources in the City Municipal Code and General Plan will reduce the potential for adverse impacts to less than significant levels. Potential impacts are comparable to those of the proposed Project.

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

Alternative 1: No Project/No Construction

Existing conditions on the undeveloped site would be preserved under Alternative 1. There would be no physical changes that would impact any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. No impacts would occur.

Alternative 2: No Project/Existing General Plan
Alternative 3: Reduced Project Intensity

Riparian Habitat

There are no lakes or constant saturated streams within the site. As discussed in Section 2.5, there are approximately 7.39 acres of non-wetland waters of the state under the jurisdiction of the RWQCB and streambed or riparian habitat under CDFW jurisdiction within the solar BSA. Approximately 4.35 acres was designated streambed and 3.04 acres was designated riparian habitat.

Consistent with the proposed Project, implementation of Mitigation Measure BIO-1 would reduce potential indirect impacts during construction of both Alternatives to a less-than-significant level. For the solar portion of Alternative 3, implementation of Mitigation Measure BIO-8 (Avoidance and Minimization of Impacts to Potential Jurisdictional Aquatic Resources) would require avoidance and minimization measures when ground-disturbing activities occur within 25 feet of waters of the state and/or jurisdictional streambeds within the Solar BSA, as described in Section 2.5.6(b).

Under both Alternatives, potential future development of areas not included in aquatic resources delineation report (Appendix D.2) has the potential to result in impacts to unidentified riparian habitats or other jurisdictional aquatic resources. An aquatic resources delineation would be conducted prior to issuance of any grading permit associated with any future proposed development outside of the previously surveyed areas (Mitigation Measure BIO-7). Implementation of Mitigation Measure BIO-9 (Sensitive Vegetation Communities and Jurisdictional Resources Mitigation Outside of Solar BSA) would ensure no-net-loss of jurisdictional aquatic resources, including riparian habitats, at a minimum of 1:1 mitigation ratio with purchase of credits at an approved mitigation bank including RWQCB/CDFW jurisdiction.

Implementation of mitigation, in addition to compliance with all appliable provisions regarding protection of riparian and jurisdictional resources in the City Municipal Code and General Plan, will reduce the potential for adverse impacts to less than significant levels. Potential impacts are comparable to that of the proposed Project.

Natural Communities

The Project BRTR recorded a total of six (6) vegetation communities and land cover types on the solar portion of the subject site. Only one of the vegetation communities observed, Desert Willow-Smoketree Wash Woodland, is considered a sensitive natural community by CDFW. On site, desert-willow–smoketree wash woodland occurs in a medium linear patch that stretches diagonally along the northwestern corner of the solar site BSA and a small patch in the northeastern portion. Both are located outside of the proposed development footprint.

Under both Alternatives, implementation of Mitigation Measure BIO-1 would reduce the effect of construction-related indirect impacts to sensitive vegetation communities to less than significant levels. Future potential development of areas not surveyed in the Project BRTR has the potential to result in impacts to sensitive vegetation communities if present. As required by Mitigation Measure BIO-7, vegetation mapping shall be conducted prior to issuance of any grading permit to determine the presence or absence of sensitive vegetation communities. Additional avoidance or compensatory mitigation measures may be required if development resulting from either Alternative would impact a sensitive vegetation community. If necessary, the project-level CEQA document for future proposed development will incorporate mitigation measures as a conditional for approval. In addition, implementation of Mitigation Measure BIO-9 (Sensitive Vegetation Communities and Jurisdictional Resources Mitigation Outside of Solar BSA) would ensure best management practices are implemented to avoid any indirect impacts on sensitive vegetation communities.

Implementation of the above mitigation measures will reduce the potential for adverse impacts to less than significant levels. Potential impacts from Alternatives 2 and 3 are comparable to that of the proposed Project.

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.

Alternative 1: No Project/No Construction

Given that Alternative 1 proposes no development, no changes to existing migratory patterns for existing and potentially occurring species would result. Therefore, Alternative 1 would not interfere with the movements of any wildlife.

Alternative 2: No Project/Existing General Plan
Alternative 3: Reduced Project Intensity

The movement of small terrestrial species throughout the area in proximity to the subject site is not anticipated to face significant restrictions considering that the Project site is located within an expansive undeveloped region of Twentynine Palms and movement by these small species within the area will be possible by the access to vacant lands to the north, south, east, and west of the site. However, as discussed in Section 2.5.6, the Project site is located within the established habitat linkage areas for desert tortoise and burrowing owl.

Migratory movement within the subject site would be disrupted with development of either Alternatives 2 or 3, but to a lesser extent compared to the proposed Project due to the less intensive development proposals. Nonetheless, consistent with the proposed Project, development under either Alternative is required to avoid impacts to desert tortoise with implementation of Mitigation Measure BIO-5 (Desert Tortoise Avoidance and Minimization Measures) and Mitigation Measure BIO-6 (Desert Tortoise Habitat Compensatory Mitigation). Impacts to burrowing owl would be avoided through implementation of Mitigation Measure BIO-3 (Pre-Construction Burrowing Owl Surveys and Avoidance. Indirect impacts resulting from construction or on-going operation of the solar facility (Alternative 3 specifically) would be mitigated to less than significant levels with implementation of Mitigation Measure BIO-1 (Construction-Related and Operational-Related Indirect Impacts to Biological Resources).

Per Mitigation Measure BIO-7, a biological technical report will be prepared for future proposed development within areas not previously surveyed to evaluate the area's value as a wildlife corridor, identify species within the area including special status species, and determine impacts to the corridor by the development. If necessary, the report will draft actionable recommendations which the project-level CEQA document will incorporate as mitigation measures, as a condition for approval.

Implementation of the above mitigation measures will reduce the potential for adverse impacts to less than significant levels. Potential impacts from Alternatives 2 and 3 are comparable to that of the proposed Project.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Alternative 1: No Project/No Construction

Because no development would occur under this Alternative, local policies and ordinances would not need to be implemented. There would be no need, for

example, to implement native plant requirements, as there would be no disruption of native plants. No impacts would occur.

Alternative 2: No Project/Existing General Plan
Alternative 3: Reduced Project Intensity

All future projects, including the proposed Project, will be required to comply with applicable conservation plans, policies, and regulations applicable to the preservation of biological resources. No development will be allowed to violate any of local policy or ordinance protecting biological resources. To ensure no conflict occurs as it relates to the site development, the Alternatives would be required to implement Mitigation Measure BIO-7 which requires a biological technical report be prepared for all unsurveyed areas to assess the presence of desert native plants, and any future proposed development will be required to submit an application and pay applicable fees to the City of Twentynine Palms for removal of protected native desert plants as required by Mitigation Measure BIO-10 (Desert Native Plants Removal Permit). In conformance with applicable plans, policies, regulations and mitigation measures, Alternatives 2 and 3, as well as the Project, will result in no impact to regulations protecting biological resources.

3.5.4 Mitigation Measures

Alternative 1 would not result in significant impact, and mitigation is not required.

Alternatives 2 and 3 would result in potential impacts associated with habitat modification resulting in a loss of habitat for special status species and restriction in migratory patterns. The same mitigation measures that apply to the proposed Project (Mitigation Measures BIO-1 through BIO-10) would apply to any of the development alternatives. No different or greater impacts would be generated by any of the Alternatives, and no additional measures would therefore be required.

3.6 Cultural Resources

3.6.1 Introduction

This section assesses the potential impacts on cultural resources associated the three proposed Alternatives. Cultural resources include Native American cultural resources, archaeological resources, historic resources, and human remains. Mitigation measures to reduce impacts to less than significant levels are identified in Section 2 where appropriate, and applied to the Alternatives as needed. As in Section 2.6, the Cultural Resources Inventory and Evaluation Report[1] (Cultural Report), which is available in Appendix E of this EIR, provides the basis for this assessment.

This section is complementary to section 3.18, Tribal Cultural Resources, which more specifically addresses issues concerning local Native American Tribes.

3.6.2 Existing Conditions

The proposed Project encompasses 477± acres of vacant land in the northwest rural portion of Twentynine Palms. The Cultural Report covers the 241-acre Solar Project site north of Samarkand Drive plus a one-mile buffer surrounding the Solar Project site. Because the Project does not propose any development on the Residential GPA parcel at this time, a separate cultural resources inventory and report would be required for that site at the time of any future proposed development.

The Cultural Report involved an NAHC Sacred Lands File records search, correspondence with local Native American tribes, tribal consultation conducted by the City with 14 Native American tribes, a CHRIS records search, and a pedestrian field survey. Two previously recorded resources and 17 newly identified resources were researched for the Cultural Report. None of the identified resources met the criteria for cultural or historical significance.

3.6.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

[1] Cultural Resources Inventory and Evaluation Report for the E-Group PS Solar Project, prepared by Dudek, January 2025.

a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5.

Alternative 1: No Project/No Construction

Alternative 1 proposes that nothing be constructed on the subject site. Existing conditions on the undeveloped subject site would be preserved under Alternative 1. There would be no changes in the significance of a historical resource, and no need for mitigation measures. No impacts would occur.

Alternative 2: No Project/Existing General Plan

Alternative 2 proposes that only the residential units as planned in the City's General Plan would be constructed on the 477-acre subject site. Residential build out per the General Plan would be consistent with existing nearby residential development. RL-5 requires a minimum lot size of five acres and RS-E requires a minimum lot size of 2.5 acres. For the area north of Samarkand Drive, the Cultural Report concluded that development would not significantly impact historical resources. For the area south of Samarkand Drive, a cultural resources inventory and report would be required prior to construction once a site plan is prepared. The same conditions would occur under Alternative 2 as compared to the proposed Project, although less land would be disturbed. However, Mitigation Measures CUL-1 through CUL-3 would be applied to this Alternative, to ensure that no sub-surface resources would be disturbed during construction of the residential units.

Implementation of the mitigation measures would ensure that any potential impacts to historical resources would be less than significant, similar to those associated with Alternative 3 and the proposed Project.

Alternative 3: Reduced Project Intensity

Alternative 3 proposes a reduced commercial solar facility of 80 acres to be located on the east parcel (APN 0612-201-05) north of Samarkand Drive. Twenty acres of the east parcel south of Samarkand Drive would be redesignated as RS-1, and the west parcel (APN 0612-201-01) would be developed per current General Plan residential designations.

As described above, the Cultural Report concluded that development north of Samarkand Drive would not significantly impact historical resources. For the entire portion of the subject site south of Samarkand Drive, a separate cultural inventory and evaluation of resources report would be conducted to analyze potential impacts to resources at the time development would occur. Mitigation Measure

CUL-1 discusses the need for the separate report, which would apply for this Alternative as well.

To mitigate any potential impacts to buried resources and human remains, Mitigation Measure CUL-2 addresses the requirement for an Archaeological and/or Tribal Resource Discovery and Documentation Plan, which would be applied under Alternative 3.

The implementation of the same three mitigation measures would ensure that impacts to cultural resources under Alternative 3 would be less than significant, as they would be under Alternative 2 and the proposed Project.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5.

Alternative 1: No Project/No Construction

Existing conditions on the undeveloped site would be preserved under Alternative 1. There would be no changes in the significance of an archaeological resource. No impacts would occur.

Alternative 2: No Project/Existing General Plan

Under this Alternative, the entire site would be disturbed, although to a lesser extent because of the larger lot configurations required in the General Plan. To reduce potential impacts to any undiscovered resources that may occur beneath the surface of the site, Mitigation Measures CUL-1 and CUL-2 would be implemented prior to construction, to assure that surveys and monitoring occur for all development projects on the site.

Under this Alternative, less land would likely be disturbed, particularly in the 241 acres involved in the Solar Project, since grading for residential development would be limited to roads, residential pads and driveways, and the likelihood of uncovering buried resources would be reduced, when compared to the proposed Project.

Implementation of the mitigation measures required of the proposed Project would ensure that any potential impacts to archaeological resources would be less than significant, consistent with the impacts of Alternative 3 and the proposed Project.

Alternative 3: Reduced Project Intensity

As described above, the Cultural Report concluded that development north of Samarkand Drive would not significantly impact archaeological resources with the implementation of mitigation measures. For the portion of the site south of Samarkand Drive, a separate cultural inventory and evaluation of resources report would be conducted to analyze potential impacts to resources by development, as described in Mitigation Measure CUL-1.

This Alternative would result in half of the grading required for the proposed Solar Project, and similar grading for the residential components of the Alternative when compared to the proposed Project. This reduced grading could result in less uncovering of buried resources, if they occur within the residential areas of the Alternative.

As with Alternative 2 and the proposed Project, Mitigation Measure CUL-2 would apply to this Alternative to require an Archaeological and/or Tribal Resource Discovery and Documentation Plan and Tribal and archaeological monitoring. This measure, along with Mitigation Measure CUL-1, would be applied to development under Alternative 3.

The implementation of the same mitigation measures as those required for the proposed Project would ensure that impacts to cultural and historic resources would be less than significant.

c) Disturb any human remains, including those interred outside of formal cemeteries.

Alternative 1: No Project/No Construction

There would be no disturbances to any human remains that are potentially occurring beneath the surface of the subject site under this Alternative, because no ground disturbance would occur. No impacts to human remains would occur under this Alternative.

Alternative 2: No Project/Existing General Plan

Alternative 2 would result in disturbance of the entire Project site, although grading would be reduced substantially for residential development, since it would be limited to roads, home pads and driveways. For the area north of Samarkand Drive, the Cultural Report concluded that development would not significantly impact human remains, with the implementation of Mitigation

Measures CUL-1 and CUL-2. Because the site would be disturbed under this Alternative, the same mitigation measures would apply.

Implementation of the mitigation measures would ensure that any potential impacts to buried human remains would be less than significant, as it would under Alternative 3 or the proposed Project.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in a smaller commercial solar facility and equivalent residential development when compared to the Project. Under this Alternative, a Cultural Report would be required for the southern portion of the site (Mitigation Measure CUL-1), and a Monitoring Plan and monitoring program would be implemented for the entire property (Mitigation Measure CUL-2). These requirements would ensure that any buried human remains anywhere on the site would be protected, and that impacts would be reduced to less than significant levels.

3.6.4 Mitigation Measures

The same mitigation measures that apply to the proposed Project would apply to any of the development alternatives. These mitigation measures are designed to reduce impacts to cultural resources to less than significant levels. No different or greater impacts would be generated by any of the Alternatives, and no additional measures would therefore be required.

3.7 Energy Resources

3.7.1 Introduction

This Section of the EIR analyzes the amount of energy that would potentially be consumed by the construction and operational activities associated with the three proposed Alternatives. Multiple sources of data ranging from Project-specific research to regional planning and environmental documents provide the basis for the following analysis. An Air Quality and Greenhouse Gas Report was prepared for the proposed Project and alternatives and is provided in Appendix C of this EIR. The report includes transportation (VMT), electricity, and natural gas consumption estimates for alternatives.

3.7.2 Existing Conditions

Electricity Service

In Twentynine Palms, electricity is provided by Southern California Edison (SCE). SCE distributes electricity to 15,000,000 people throughout central, coastal and southern California (excluding the City of Los Angeles). The 50,000 square mile service area includes over 180 incorporated cities and a majority of the unincorporated communities within 15 counties. In 2022, SCE distributed electricity throughout San Bernardino County that was primarily sourced from natural gas power plants (8,187 GWh), renewables (3,566 GWh), large hydroelectric plants (551 GWh), and coal (273 GWh).[1]

Natural Gas Service

Natural gas is provided to the City by the Southern California Gas Company (SoCal Gas) and is used for home heating, water heating, laundry dryers and gas stoves, as well as for generating electricity. SoCal Gas supports the development of renewable natural gas (RNG) resources which is derived from methane generated by landfills, composted food waste, waste from livestock and dairy facilities, and wastewater treatment plants. RNG can be captured and transported along existing SoCalGas gas pipelines. Senate Bill 1440 sets biomethane or RNG procurement requirement targets for natural gas producers in California.

Transportation Fuel

In California, transportation fuels account for approximately one-half of the State's greenhouse gas emissions and result in significant impacts on air quality, environmental health and public health. The Division of Fuels and Transportation

[1] Total Generation by Type and County 2022, California Energy Commission, August 10, 2023.

within the California Energy Commission oversees three programs that aim to reduce emissions, diversify the transportation fuel supply, and reduce reliance on petroleum-based fuels.

See Section 2.7 for detailed descriptions of the pertinent regulatory framework that governs energy use associated with development on the Project site.

3.7.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

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

Alternative 1: No Project/No Construction

Under Alternative 1 there would be no development of a commercial solar facility or any residential units. Existing conditions on the undeveloped 477 acres site would be preserved and no energy consumption would occur. As such, there would be no impact.

Alternative 2: No Project/Existing General Plan

Alternative 2 Construction Energy Consumption

Alternative 2 proposes that only single-family residential units at current General Plan densities would be constructed on the 477-acre Project site. Residential build out would result in the construction of 119 single family homes. In the RL-5 zone, there would be 72 homes where the minimum lot size is five acres, and in the RS-E zone, there would be 47 homes on minimum lot sizes of 2.5 acres.

Like the proposed Project, future buildout of the 119 residences would primarily consume transportation fuel during site preparation, grading, building construction, paving and roadway construction, and architectural coatings. The primary energy source during construction would be petroleum fuels (i.e. gasoline and diesel), which would be used for the operation of heavy equipment, manufacturing and transport of materials, and transport of construction workers. Electricity would be used to a lesser extent, in order to power electric equipment, worksite lighting, and temporary worksite offices.

The use of construction equipment and construction worker trips would represent a "single-event" fuel demand and would not require an on-going long-term

demand for fuel resources. In addition, the equipment used for construction would conform to California Air Resources Board (CARB) regulations and California emissions standards intended to clean up construction equipment fleets by retiring older models for newer, cleaner models. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Overall, gasoline and diesel fuels consumed for transportation during construction activities would be temporary and would not be wasteful or inefficient. Therefore, impacts would be less than significant.

Alternative 2 Operational Energy Consumption

Under Alternative 2, and similar to the Proposed Project, the 119 residential units would annually consume 146,118 gallons of gasoline (3,565,301 annual VMT at 24.4 mpg), 905.545 MWh of electricity and 3,723.476 MMBtu. The annual demand of 146,118 gallons represents 0.022 percent of the County's passenger vehicle fuel demand in 2024 (661,187,971 gallons), 905.545 MWh represents 0.0058% of the County's annual electricity consumption, and 3,723.476 MMBtu represents 0.0077% of the County's annual natural gas consumption. Tables 3.7-1 and 3.7-2 provide snapshots of the electricity and natural gas percentages.

Table 3.7-1
Alternative 2
Operational Total Annual Electricity Consumption for 2030

Jurisdiction	2030 MWh Annual Consumption	Project Percentage of 2030 City and County Consumption
Alternative 2	905.545[2]	
Twentynine Palms[1]	96,272	0.94%
San Bernardino County[1]	15,482,994	0.0058%

1. Table 4-3, Electricity Consumption by Jurisdiction, San Bernardino County Greenhouse Gas Reduction Plan-Appendices, March 2021.
2. Conversion of kWh to MWh. 1 MWh = 1,000 kWh.

Table 3.7-2
Alternative 2
Operational Total Annual Natural Gas Consumption for 2030

Jurisdiction	2030 MMBtu Annual Consumption	Project Percentage of 2030 City and County Consumption
Alternative 2	3,723.476[2]	
Twentynine Palms[1]	214,707	1.73%
San Bernardino County[1]	48,342,177	0.0077%

1. Table 4-4, Natural Gas Consumption by Jurisdiction, San Bernardino County Greenhouse Gas Reduction Plan-Appendices, March 2021.
2. Converted kBTU to MMBtu. 1 MMBtu = 1,000 kBtu

Alternative 2 would result in an incremental increase to the City's and County's overall consumption of energy but would not exceed the previously planned growth for the City and the region. With improvements in building and appliance energy efficiency, and rooftop solar mandates, the new homes would likely consume less energy than expressed in the CalEEMod unmitigated totals discussed above in this analysis.

Impacts from the construction Alternative 2 would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Impacts would be less than significant.

However, this Alternative would not result in the generation of any energy, and would therefore consume more energy than it would produce, unlike the proposed Project and Alternative 3.

Alternative 3: Reduced Project Intensity

Alternative 3 proposes a reduced commercial solar facility on 80 acres of the east parcel north of Samarkand Drive. Twenty acres of the 80 acres south of Samarkand Drive would be redesignated RS-1. The west parcel would be developed per the current General Plan residential designations. The following provides a breakdown of the number of dwelling units in each residential land use and zoning designation under Alternative 3:

- 20 homes in the RS-1 zone (80 acres)
- 47 homes in the RS-E zone (78 acres)
- 52 homes in the RL-5 zone (259 acres)

Alternative 3 Construction (Solar and Residential) Energy Consumption

As with the Proposed Project and Alternative 2, the primary energy source during construction would be petroleum fuels (i.e. gasoline and diesel), which would be used for the operation of heavy equipment, manufacturing and transport of materials, and transport of construction workers. Electricity would be used to a lesser extent, in order to power electric equipment, worksite lighting, and temporary worksite offices. The use of construction equipment and construction worker trips would represent a "single-event" fuel demand and would not require an on-going long-term demand for fuel resources. Overall, with increasing energy efficiency standards, energy consumed during construction activities would be temporary and would not be wasteful or inefficient. Therefore, impacts would be less than significant.

Alternative 3 Solar Operational Energy Impacts

Transportation Energy: The solar facility would be unmanned and the only energy consumed during the operational phase would be maintenance vehicle fuel when workers travel to the site approximately three times per year. Assuming an average one-way trip length of 50 miles, or 100 miles including the return trip, and a service vehicle mileage per gallon of gasoline equivalent rate of 6.8 mpg[2], the potential consumption of fuel during travel to service the Solar Project site could be 14.7 gallons of gasoline equivalent to complete a service trip, or 44.1 gallons annually. Of the County's daily VMT of 59,483,118 miles, 474,408 daily VMT were attributed to Class 4-6 medium-duty diesel trucks (T6 Instate Delivery Class, Other Class, and Utility Class 4-6 Diesel)[3]. Assuming the same mileage per gallon of gasoline equivalent rate of 6.8 mpg, medium-duty trucks in the County consumed the equivalent of 69,765.88 gallons of gas a day, or 25,464,5474 gallons a year. The Solar Projects annual demand of 44.1 gallons represents 0.0001 percent of the County's medium-duty truck fuel demand in 2024.

Solar Energy: The proposed 80-acre solar project for Alternative 3 represents 43% of the originally proposed 50 MW Solar Project and therefore would potentially generate 21.5 MW of electricity. To calculate the maximum annual kWh potential of a 21.5 MW solar array, the power capacity was first converted 21,500 kW. The maximum energy output in kWh was then determined by multiplying this capacity by the total number of peak sun hours in a year. Assuming an average of 6.5 peak sun hours per day in California, the daily output would be139,750 kWh (21,500 kW × 6.5 h)[4]. Over 365 days, this resulted in an annual maximum potential of 51,008,750 kWh (139,750 kWh/day × 365 days). This calculation represents the theoretical maximum under optimal conditions. Calculating for realistic conditions would include a system loss due to equipment efficiency losses, seasonal variations, or region-specific environmental factors.

According to the National Renewable Energy Laboratory (NREL), large energy facilities lose 0.75% of their production capacity per year.[5] Exposure to

2 Assumes maintenance of the site would require a medium-duty Class 4-6 vehicle with an estimated 6.8 mpg of gasoline equivalent per the U.S. Department of Energy Average Fuel Economy by Major Vehicle Category for "Delivery Trucks". https://afdc.energy.gov/data/10310, accessed October 2025.

3 EMFAC2025 v2.0.0, accessed October 2025. Scenario Analysis, San Bernardino County, 2024. https://arb.ca.gov/emfac/scenario-analysis/generate-template.

4 Kielar, H. (2023, March 30). *Guide To Peak Sun Hours*. GreenLancer, https://www.greenlancer.com/post/peak-sun-hours, accessed April 2025.

5 National Renewable Energy Laboratory, *How Extreme Weather and System Aging Affect the US Photovoltaic Fleet*, January 24, 2024, https://www.nrel.gov/news/program/2024/how-extreme-weather-and-system-aging-affect-the-us-photovoltaic-fleet.html#:~:text=In%202022%2C%20in%20their%20first,End%20of%20interactive%20chart , accessed February 2025.

environmental elements degrades equipment and leads to slight losses in energy production.[6] Productivity loss is greater in warmer climates than in cooler climates. After the first year, the amount of electricity generated by the solar component of Alternative 3 could decline annually by 0.75%. The NREL's PVWatts Calculator, which assumes a default system loss of 14.08%, was used to predict that the Alternative 3 solar project could generate an average of 40,011,798 kWh during the first year.[7]

Assuming a 0.75% annual decline over 30 years and no efficiency upgrades or panel replacements the following numbers show how much energy Alternative 3 is expected to generate:[8]

Year 1: 40,011,798 kWh generated
Year 10: 37,110,194 kWh generated
Year 20: 34,419,010 kWh generated
Year 30: 31,922,988 kWh generated

Net Energy Impacts: While the Alternative 3 solar project would consume energy mostly in the form of transportation fuel during maintenance activities, it will produce more energy that it consumes through the production of electricity. To make a direct comparison between the amount of energy consumed and the amount of energy conserved during the operational phase, the gallons of diesel and gasoline fuels consumed were converted to 1.61 total MWh then compared to the output of energy during the first year of operation. Table 3.7-3 provides this comparison.

Table 3.7-3
Alternative 3
Solar Project Net Energy Production

Fuel Type	Annual Consumed	Conversion to MWh	Solar Project Annual Energy Output 1st Year	Net Energy Produced
Gasoline Equivalent	44.1 gallons	1.61 MWh	40,011.798 MWh	40,010.188 MWh
1. 1 gallon of gasoline = 0.0366 MWh.				

6 System losses account for performance losses you would expect in a real system. The default values (percentage) for the system loss categories used in the PVWatts Calculator are as follows: soiling (2), shading (3), mismatch (2), wiring (2), connections (0.5), light-induced degradation (1.5), nameplate rating (1) and availability (3).

7 *PVWatts Calculator*. Pvwatts.nrel.gov. https://pvwatts.nrel.gov/.

8 Calculation: kWh saved = 93,050,290 x (1-rate)years

Alternative 3 Residential Operational Energy Consumption

Under Alternative 3, the 119 residential units would annually consume the same energy as Alternative 2: 146,118 gallons of gasoline (3,565,301 annual VMT at 24.4 mpg), 905.545 MWh of electricity and 3,723.476 MMBtu. The annual demand of 146,118 gallons represents 0.022 percent of the County's passenger vehicle fuel demand in 2024 (661,187,971 gallons), 905.545 MWh represents 0.0058% of the County's annual electricity consumption, and 3,723.476 MMBtu represents 0.0077% of the County's annual natural gas consumption. See Tables 3.7-1 and 3.7-2.

Summary

In summary, under Alternative 3, the 80-acre solar facility would generate approximately 110 MWh of energy per day during year 1 of the operational phase,[9] while consuming approximately 1.61 MWh of energy annually during ongoing maintenance activities. Operation of the 119 residences would consume the equivalent of 905.5 MWh annually. Combined with the net energy production of the Alternative 3 Solar Project, Alternative 3 as a whole would result in a net energy production of 50,103 MWh. With improvements in building and appliance energy efficiency, and rooftop solar mandates, the new homes would likely consume less energy than expressed in the CalEEMod unmitigated totals discussed above in this analysis. Alternative 3 would result in a net production of energy (MWh) and is not in exceedance of previously planned energy consumption for the region.

Overall, the solar portion of Alternative 3 would generate more energy annually than would be consumed by the construction and annual operation of the entire Alternative 3 project. Impacts from the construction and operation of Alternative 3 as a whole would not result in wasteful, inefficient, or unnecessary consumption of energy resources and are expected to be less than significant, as are the impacts of Alternative 2 and the proposed Project.

3.7.4 Mitigation Measures

No mitigation measures are required as energy consumption impacts are expected to be less than significant.

[9] Calculation is based on the NREL PVWatts estimation of 40,011,798 kwh annual output, which is divided by 365. The daily output would be 109,621 daily kwh.

3.8 Geology and Soils

3.8.1 Introduction

This section of the EIR analyzes the potential impacts associated with the Project alternatives based on regional and local geologic and soil conditions.

3.8.2 Existing Conditions

The Project site is located within a seismically active region, influenced by regional fault lines including the Garlock Fault to the north, the San Andreas Fault to the west and southwest, and the Granite Mountains and Packard Well Faults to the east. The nearest is the Pinto Mountain Fault, located approximately 0.70 miles south of the Project site.

Other regional geological hazards including liquefaction, slope failure or landslide, and expansive and collapsible soil have a negligible effect on the Project site. Liquefaction, for example, occurs when there is a combination of unconsolidated soil and shallow groundwater. Based on groundwater trends within the site's vicinity, groundwater is assumed to be at a depth of 194 feet to 205 feet. Under these conditions, the probability for liquefaction to occur within the Project site during a seismic event is negligible. Furthermore, the site is underlain by sandy soil and part of a larger desert terrain consisting of low profile slopes and within a relatively flat region of Twentynine Palms where there are no hillsides, mountainsides, or steep slopes in relative proximity. As such, the probability for landslide, expansive soil (clay content), or soil collapse to occur is very low.

Apart from strong ground shaking, soil erosion also poses a geological hazard to the site. Its susceptibility may occur by ground destabilizing activities during construction, including the grading phase. Disturbance of the topsoil and removal of native vegetation could result in an increased risk of soil erosion.

For a detailed report on existing geological conditions, please see Section 2.8.5 in this EIR.

3.8.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

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

ii) Strong seismic ground shaking.
iv) Landslides.

Alternative 1: No Project/No Construction

Alternative 1 proposes no development on the Project site (477± acre). Therefore, no changes to the property's current conditions or susceptibility for geological hazards would occur. Alternative 1 will result in no impacts.

Alternative 2: No Project/Existing General Plan

As previously noted, the property is 0.70± miles north from Pinto Mountain fault and thus subject to strong ground shaking in the event of fault movement. Depending on the hypocenter location relative to the Project site, the earthquake magnitude would reduce in strength with distance. Nevertheless, strong ground shaking from the Pinto Mountain fault and to a lesser extent, other regional faults, would cause adversely affects to the property.

Alternative 2 proposes development in accordance the City General Plan land use, which would include 72 residential units on 360± acres of RL-5 land and 47 residential units on 117± acres of RS-E land. In total, the property would consist of 119 residential units, in addition to infrastructure improvements such as an interior street system and roadway dedications built as planned by the City Circulation Element.

To reduce the possibility for adverse effect from strong ground shaking, the residential project would be required to comply with the most current version of the California Building Code (CBC) and local building and development standards as stated in the City Municipal Code. Additionally, a geological technical report would be prepared to assess the site and the Alternative's susceptibility for impact from strong ground shaking, as well as other geological hazards, and if required, implement the recommended design measures as a condition for approval so as to secure the Project's structural integrity in the event of strong ground shaking.

In regard to the property's susceptibility for landslides, there are no hillsides, mountainsides, or steep slopes in proximity to the site or its surrounding area. There are, however, slopes in the western region of the property, which are not landslide hazardous zones due by their low profile and loose sandy composition. The probability for seismically induced landslides occurring within the property area is considered low.

Based on the property's condition for seismically induced landslides, buildout of Alternative 2 is unlikely to be susceptible to damage from slope instability and landslide. Nonetheless, Alternative 2 would be required to adhere to state and local Building Code requirements to reduce potential adverse risk, and would be required to prepare a geological technical assessment determining the site's composition, strength, and local bearing capacity, and implement the report's recommendations, if deemed necessary. Alternative 2 would not result in loss, injury, or death related to seismically induced landslides.

Impacts would be less than significant, and similar to those expected under Alternative 3 and the Project.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in an 80± acre commercial solar array facility and 20 acres of RS-1 housing which would result in potential development of 20 new homes. The balance of the property would be developed per the current General Plan designations of RL-5 and RS-E. Subject to the same geological conditions for strong ground shaking, buildout of Alternative 3 would also be required to comply with the same City and CBC standards for structural integrity for all development components. Per state standards, a geological technical report would be prepared to evaluate the site and project's susceptibility for strong ground shaking and if necessary, recommend additional action to safely implement the project.

In regard to the property's susceptibility for landslides, there are no hillsides, mountainsides, or steep slopes in proximity to the site or its surrounding area. The slopes in the western region of the property are not landslide hazard zones due by their low profile and loose sandy composition. The probability for seismically induced landslides occurring within the property area is considered low.

Buildout of Alternative 3 is unlikely to be susceptible to damage from slope instability and landslide. Alternative 3 would be required to adhere to state and local Building Codes to reduce potential adverse risk, and would be required to prepare a geological technical assessment determining the site's composition, strength, and local bearing capacity, and implement the report's recommendations, if deemed necessary. Alternative 3 would not result in loss, injury, or death related to seismically induced landslides.

Impacts would be less than significant and similar to those expected under Alternative 2 and the proposed Project.

b) Result in substantial soil erosion or the loss of topsoil.

Alternative 1: No Project/No Construction

Alternative 1 would result in no changes to the property's existing undeveloped and unoccupied state. Therefore, the site's natural drainage pattern and native vegetation would remain undisturbed and, in turn, the property's susceptibility for soil erosion would remain as it is currently. Alternative 1 would result in no impact to the site's susceptibility for soil erosion.

Alternative 2: No Project/Existing General Plan

Development of residential units by Alternative 2 would involve grading portions of the site and thus removing existing vegetation and destabilizing the topsoil, which would result in an increased likelihood for water and wind erosion. However, in accordance with the MDAQMD's Rule 403 for fugitive dust control, and the City's mandate for a stormwater pollution and prevention plan, actionable measures would be implemented to control soil erosion. Once developed, the site will consist of soil stabilizing features such as building foundations, paved driveways, concrete sidewalks, curb/gutter system, and landscaping, which would further manage the potential for erosion. Under these conditions, Alternative 2 would result in less than significant impacts relating to soil erosion.

Alternative 3: Reduced Project Intensity

Alternative 3 would destabilize the property's soil by developing a commercial solar array on 80± acres, and residential units on the balance of the site. However, assuming the same soil erosion conditions would be implemented on Alternative 3 as for the proposed Project or Alternative 2, all project components would avoid disturbing or altering the structure of the natural drainages crossing the property area. The solar development would also propose the revegetation of the 80± acre site after buildout so as to stabilize the ground surface after grading and equipment installation. The residential portion would disturb less land, and would comply with development standards for soil erosion as mandated by the City Municipal Code and MDAQMD. In addition, the property would include soil-stabilizing features such as landscaping, paved driveways, roadways and sidewalks, fencing, and a local stormwater management system. The implementation of these soil erosion control features will limit the potential for wind and water erosion to cause significant effects. As such, Alternative 3 would have less than a significant impact on soil erosion, and be similar to both Alternative 2 and the proposed Project.

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.

Alternative 1: No Project/No Construction

Alternative 1 would result in no development or land modifications occurring on the site. As such, the potential for soil destabilizing hazards including landslides, lateral spreading, subsidence, liquefaction or collapse would not occur. No impact from these potential geological hazards would affect the implementation of Alternative 1.

Alternative 2: No Project/Existing General Plan

Alternative 2 would result in single family homes on larger lots, with less ground disturbance expected than for the proposed Project, due to the limited grading required for house pads, driveways and roadways. As discussed above, soil stability hazards including landslides and liquefaction are not expected to affect the site because the property is relatively flat with gentle sandy slopes, and based on groundwater trends within the site's vicinity, groundwater is expected to range between 194 feet to 205 feet below ground surface. Furthermore, lateral spreading is a type of liquefaction-induced ground failure which typically occurs on gentle slopes and flat terrain. Although there are slopes within the Project area, groundwater is projected to be at a depth greater than 50 feet and therefore, the potential for lateral spreading is also negligible.

Land subsidence is a direct result from excessive groundwater extraction at a faster rate than replenishment. Based on the U.S. Geology Survey, the Project site is not identified on or near an area likely to experience land subsidence. Additionally, disturbance from construction and residential use is not associated with inducing soil settlement and thus, no impacts from subsidence are anticipated to affect the property.

Soil collapse typically occurs in Holocene-age soils that are supported by clay, silt, or carbonate bands which undergo rearrangement when saturated, leading to a substantial and rapid settlement under relatively light loads. The Project area is predominantly underlain by Quaternary-aged soils which may include clay, soil, and carbonate but not at a significant percentage to cause soil collapse on-site. Although impacts from soil collapse are expected to be less than significant, Alternative 2 would be required to prepare a geological technical report to evaluate the site's and the project's potential for soil collapse, and if necessary, recommend structural design features to reinforce building foundations. Adherence to these recommendations would be required under conditions of project approval and, as such, impacts related to soil collapse will be less than significant.

Alternative 2 would not be subject to a higher risk factor for geological hazards from liquefaction, landslides, lateral spreading, subsidence, or soil collapse. With compliance with applicable State and local standards, potential impacts would be less than significant.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in a smaller solar facility than the proposed Project, as well as the construction of single family homes.

Landslides and liquefaction are not expected based on groundwater depths ranging between 194 feet to 205 feet below ground surface, and the lack of significant slopes on and adjacent to the property. Similarly, lateral spreading, as explained above, will not significantly impact construction on the site.

Land subsidence is not identified on or near the property. Impacts associated with subsidence would, like the proposed Project, be less than significant with the implementation of site- and project-specific grading methods.

The Project area is predominantly underlain by Quaternary-aged soils and not subject to soil collapse. As with Alternative 2 and the proposed Project, development of Alternative 3 would require the preparation of a geological technical report to evaluate the potential for soil collapse, and if necessary, recommend structural design features to reinforce building foundations. Adherence to these recommendations would be required under conditions of project approval and, as such, impacts related to soil collapse will be less than significant.

Alternative 3 would result in less than significant impacts associated with geotechnical hazards, and would have similar impacts when compared to Alternative 2 and the proposed Project.

3.8.4 Mitigation Measures

Consistent with the discussion above, no mitigation measures are required, because standards and requirements imposed by the City, MDAQMD and others would assure that geotechnical and soil impacts would remain less than significant.

3.9 Greenhouse Gas Emissions

3.9.1 Introduction

The following section of the EIR analyzes the potential greenhouse gas emissions and resulting impacts associated with the three proposed Project alternatives. Multiple sources of data ranging from Project-specific research to regional planning and environmental documents provide the basis for the following analysis. An Air Quality and Greenhouse Gas Report was prepared for the proposed Project and alternatives and is provided in Appendix C of this EIR.

3.9.2 Existing Conditions

"Greenhouse gas" (GHG) is a broad term referring to chemicals and substances in the atmosphere that alter of the Earth's climate by trapping heat in the lower troposphere. Small amounts of several GHGs are released into the air via natural processes, while the majority of the current GHG concentration has been released by human activities since the Industrial Age. The California Air Resources Board (CARB) monitors and regulates seven GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), nitrogen trifluoride (NF_3), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs).[1] The latter four gases, all of which contain fluorine, are sometimes collectively referred to as high global warming potential greenhouse gases (high-GWP gases).

See Section 2.9 for detailed descriptions of the most prevalent greenhouse gases and the regulatory framework that governs emissions and emissions reductions.

3.9.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Direct GHG emissions stem from activities controlled by a project, such as fossil fuels used by equipment, worker commutes, and vendor trips during construction, and vehicle use during the operational phase. Indirect GHG emissions stem from off-site activities linked to a project's operations, like energy use (e.g., electricity or heating), solid waste disposal (e.g., methane from landfills), and water use

[1] California Health and Safety Code § 38505 (g).

(e.g., energy for pumping and treatment). The California Emissions Estimator (CalEEMod), version 2022.1, was used to calculate GHG emissions from the construction and operational phases of Alternative 2 and Alternative 3. As the MDAQMD has not established GHG emissions thresholds for construction, the constructions emissions are amortized over a 30-year lifespan and added to the operational emissions so as to provide an annual GHG emissions estimate that includes the construction phase impacts.

Alternative 1: No Project/No Construction

Alternative 1 proposes that neither a commercial solar facility nor any residential units would be constructed on the Project site and existing conditions on the undeveloped 477 acres site would be preserved. There would be zero GHG emissions, and therefore, no impact would occur.

Alternative 2: No Solar Project/Existing General Plan

Alternative 2 proposes that only the single family residential units currently allowed under the General Plan would be constructed on the 477-acre Project site. Residential build out would result in the construction of 119 single family homes: RL-5 requires a minimum lot size of five acres and would have 72 homes on 360 acres; RS-E land use requires a minimum lot size of 2.5 acres and would have 47 homes on 117 acres.

As Alternative 2 omits the Solar Project, only emissions from the build out of the 119 homes were calculated using CalEEMod. Modeling for Alternative 2 GHG emissions impacts was based on generalized residential construction estimates for the purpose of providing an approximate understanding of potential impacts.

As shown in Table 3.9-1, total construction emissions for the build out of Alternative 2 would equal 2,483 $MTCO_2e$. Amortized over 30 years, construction emissions would be 82.77 $MTCO_2e$ annually. Total annual operational emissions are calculated to be 1,727.28 $MTCO_2e$. When added to the amortized construction emissions, the estimated total annual emissions for build out of Alternative 2 are 1,810.05 $MTCO_2e$. GHG emissions stemming from the construction and operation of Alternative 2 would be significantly less than the applicable MDAQMD threshold, and are therefore considered to result in a less than significant impact.

Table 3.9-1
Alternative 2
Projected Annual GHG Unmitigated Emissions Summary
(Metric Tons)

Alternative 2 Construction	**CO_2e (MT/YR)**
Construction Total	2,483
Alternative 2 Construction Operational	**CO_2e (MT/YR)**
Area	102
Energy	341
Mobile	1,241
Waste	27
Water	16
Refrigerants	0.28
Alternative 2 Operational Subtotal	1,727.28
Alternative 2 Construction: 30-Year Amortized[1]	82.77
Total Alternative 2 Annual Emissions	**1,810.05**
MDAQMD Annual Threshold	90,718[2]

1. Buildout Construction GHG emissions are amortized over 30 years and then added to annual operational GHG emissions.
2. The MDAQMD threshold of 100,000 short tons is converted to 90,718 metric tons.

Alternative 2 Summary

While Alternative 2 would have a less than significant impact overall, the emissions are higher than those of the proposed Project, which would be -12,861.67 $MTCO_2e$ due to the GHG savings from the Solar Project (see Table 2.9-3). Because of this, Alternative 2 would have the greatest impact with regard to greenhouse gas emissions as it does not include any GHG savings from renewable energy production. As is the case with the Project and Alternative 3, Alternative 2 also falls below the SCAQMD threshold of 3,000 CO_2e MT/YR, as described in Section 2.9.

Alternative 3: Reduced Project Intensity

Alternative 3 proposes a reduced commercial solar facility of 80 acres to be located on the east subject parcel (APN 0612-201-05) north of Samarkand Drive. Twenty acres of the 80 acres of the east subject parcel south of Samarkand Drive would be redesignated as a higher density residential zone, RS-1. As a result, this Alternative would result in 119 residential units, consistent with the Project and Alternative 2.

Under this Alternative, the proposed 80-acre commercial solar facility represents a 57% reduction in size of the originally proposed 50 MW Solar Project, which would potentially generate 21.5 MW of electricity (or, 43% of the original 50 MW Solar Project). The CalEEMod assumptions used for the Solar Project were used to calculate Alternative 3 emission reductions, but at the smaller project size.

As with the Solar Project, Alternative 3 would result in a reduction in production over time. Table 3.9-2 shows the estimated decline of electricity generated over three decades with the corresponding decline in the amount of GHG emissions that would be avoided.

Table 3.9-2
Alternative 3 Projected Kilowatt Hours Generated
Metric Tons of CO_2e Avoided

Year of Operation	kWh Generated	CO_2e Avoided (MT)
Year 1	40,011,798	9,692
Year 10	37,110,194	8,990
Year 20	34,419,010	8,338
Year 30	31,922,988	7,733

3. Calculation for kilowatts saved = 93,050,290 x $(1\text{-rate})^{years}$
4. CO_2e MT provided by CalEEMod.

As shown in Table 3.9-3, total construction emissions for the Alternative 3 solar project would be 256 $MTCO_2e$, or 8.53 $MTCO_2e$ annually over a 30-year lifespan. During the first year of operation, the solar project would yield an overall avoidance of 9,692 $MTCO_2e$ by sending emission-free electricity to the power grid. The construction phase of the Alternative 3 residential project would emit 2,447 $MTCO_2e$ during construction, or 81.56 $MTCO_2e$ annually for 30 years. Operational activities would emit approximately 1,724.28 $MTCO_2e$. With the GHG savings from the solar facility, Alternative 3 would ultimately result in the reduction of GHGs by 7,877.44 $MTCO_2e$.

Table 3.9-3 Alternative 3 Solar and Residential Projects Projected GHG Unmitigated Emissions Summary (Metric Tons)	
Alternative 3 Solar Project	**CO_2e (MT/YR)**
Construction 30-Year Amortized Total	8.53
Operational Annual	0.19
Solar GHG Savings Year 1	-9,692
Alternative 3 Solar Project Annual Total: Construction 30-Year Amortized[1] + Operational+ Solar GHG Savings	-9,683.28
Alternative 3 Residential Project Operational	**CO_2e (MT/YR)**
Area	102
Energy	341
Mobile	1,238
Waste	27
Water	16
Refrigerants	0.28
Alternative 3 Residential Operational Subtotal	1,724.28
Alternative 3 Residential Construction: 30-Year Amortized[1]	81.56
Total Alternative 3 Residential Annual Emissions	1,805.84
Alternative 3 Total Annual Operational Emissions (-9,683.28 for Solar + 1,805.84 for Residential)	**-7,877.44**
MDAQMD Annual Threshold	90,718[2]

1. Buildout Construction GHG emissions are amortized over 30 years and then added to annual operational GHG emissions.
   - Solar Field Total: (256 $MTCO_2e$ / 30 = 8.53)
   - Residential GPA Total: (2,447 $MTCO_2e$ / 30 = 81.56)
2. The MDAQMD threshold of 100,000 short tons is converted to 90,718 metric tons.

Alternative 3 Summary

Alternative 3 direct greenhouse gas emissions from the construction and operational phases would be 2,342.15 $MTCO_2e$ annually, well below the MDAQMD threshold. When both Alternative 3 solar emissions reductions and residential projects are considered as a whole, Alternative 3 achieves an overall reduction in greenhouse gas emissions of 7,877.44 $MTCO_2e$ and would have a lower impact than Alternative 2, and would result in a beneficial impact from emissions reductions, although to a lesser degree than the proposed Project. As is the case with the Project and Alternative 2, Alternative 3 also falls below the SCAQMD threshold of 3,000 CO_2e MT/YR, as described in Section 2.9.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Section 2.9 provides a description of State, regional and local applicable plans and policies aimed at reducing GHGs. Such plans include CARB's 2022 Scoping Plan Update for Achieving Carbon Neutrality and the 2021 San Bernardino County Regional Greenhouse Gas Reduction Plan. Currently, the City is meeting and is on track to exceed the 2030 GHG emissions reduction target of 46% below 2008 emissions levels.

Alternative 1: No Project/No Construction

Alternative 1 proposes that neither a commercial solar facility nor any residential units would be constructed on the Project site and existing conditions on the undeveloped 477 acres site would be preserved. Alternative 1 would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases, and therefore, no impact would occur.

Alternative 2: No Solar Project/Existing General Plan

The proposed Alternative 2 build out of the General Plan land uses on the Project site would result in annual GHG emissions of 1,705.25 $MTCO_2e$, which is significantly lower the MDAQMD threshold. All components of construction and operation would be subject to the current MDAQMD Rules as applicable to greenhouse gas emissions and to local, regional, and statewide building codes including California Building Standards Code, Title 24, Part 11 (CALGreen) which are aimed at increasing energy efficiency of buildings. Compliance will be ensured through MDAQMD Rule 201, which requires preconstruction plan review prior to issuance of a construction permit from the Air Pollution Control Officer. Resulting impacts are anticipated to be less than significant as with the proposed Project and Alternative 3.

Alternative 3: Reduced Project Intensity – Less Than Significant Impact

Alternative 3 also aligns with all applicable plans, policies, and regulations designed to reduce greenhouse gas (GHG) emissions. Moreover, this Alternative is expected to achieve a net reduction in GHG emissions of 7,7,877.44 $MTCO_2e$, further contributing to State, regional and local GHG reduction goals. As a result, its impacts are anticipated to be less than significant, as are those of Alternative 2 and the proposed Project.

3.9.4 Mitigation Measures

Compliance with the City's General Plan policies, standard MDAQMD rules and regulations, the San Bernardino County and CARB greenhouse gas reduction plans, and California Title 24 regulations will ensure construction and operational impacts on greenhouse gas emissions remain less than significant. No additional mitigation measures are required.

3.10 Hazards and Hazardous Material

3.10.1 Introduction

This section of the EIR describes the potential for the Project Alternatives to create hazards to the public or residents of the area through transport, use, or disposal of hazardous materials, exposure of persons to existing on-site hazardous materials, or soil contamination.

3.10.2 Existing Conditions

Based on the current land use, the 477± acre parcel is vacant and unoccupied. Historically, no previous development has occurred within the property since at least 1956. Similarly, no development has occurred on the property abutting the site to the north and west. Gradual development in proximity to the property has consisted primarily of residential land uses to the south and east, as well as road and utility infrastructure. Considering the lack of development and industrial use on-site, the property is unlikely to have been previously exposed or contaminated by hazardous substances related to their transport, use, and/or disposal.

Neither the property nor any area within a mile radius from the site is identified within the Superfund National Priorities List (NPL) or the Hazardous Waste and Substance Site database (Cortese List).

A detailed discussion on hazardous conditions and materials in the Project area can be found on Section 2.10.

3.10.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Alternative 1: No Project/No Construction

Alternative 1 proposed no development on the Project site and, as such, the property would not be a source of hazardous material use, storage or disposal which could result in a change in the property's existing environmental conditions. No impacts regarding hazardous materials would occur with Alternative 1.

Alternative 2: No Project/Existing General Plan

Alternative 2 proposes the development of the site as currently designated in the General Plan, resulting in the construction of up to 119 residential units.

Construction of the residential units would involve the use of hazardous materials, such as fuels (gasoline and diesel), oils and lubricants, and cleaners (i.e., solvents, corrosives, soaps, detergents), which are commonly used in construction projects. The use and disposal of these hazardous materials during construction would be subject to regulation by the federal, state, and local policies governing the transport, use, storage, and disposal of hazardous materials in the same way as the proposed Project. Compliance with these regulatory standards ensures the use of hazardous materials during construction would not cause long term environmental impacts.

Once operational, this Alternative will result in up to 119 residential units. Each unit is likely to use and store hazardous materials in small quantities, including cleaners, pesticides and fertilizers, paint, varnish, laundry products, and automobile oils, which are commonly found in residential settings. Disposal of household hazardous waste is subject to state and local regulation. Furthermore, Burrtec Waste Industries, Inc. (Burrtec), as part of its contract with the City of Twentynine Palms, offers roadside pickup of household hazardous waste to ensure the proper disposal of waste so as to avoid potential spills or exposure to toxins. San Bernardino County also provides a hazardous drop-off service station in the community of Joshua Tree. The availability of these services to manage household hazardous waste reduces the probability for improper disposal and, in turn, limits the potential for environmental impact by the release of hazardous waste. Adherence to regulation and use of hazardous waste disposal services would reduce potential impacts to less than significant levels.

Development in accordance with Alternative 2 would introduce a source of hazardous waste on-site but at a lesser scale than that of the proposed Project. Similar to the proposed Project and Alternative 3, compliance with regulatory standards and use of hazardous waste disposal services would assure that potential impacts would be less than significant.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in an 80± acre commercial solar array facility on the north half of the eastern parcel, and 20 acres of RS-1 designated land on the south half of that parcel, which would result in potential development of 20 homes. The remainder of the site would be developed in accordance with the existing City General Plan land use designations. Alternative 3 would result in the same residential build out as the Project and Alternative 2.

Consistent with Alternative 2 and the proposed Project, the construction phase will involve the use of hazardous material through the use of fuel (gasoline and diesel), oil and lubricants, and cleaners. The transport, use, and disposal of hazardous material to the site would be temporary and regulated by federal, state, and local standards for the management and disposal of hazardous material/waste at a construction site. Therefore, hazardous material used during construction would not result in significant environmental risk and impacts would remain less than significant.

Upon operation, solar array facilities include equipment such as solar PV panels, wiring, electronic equipment and transformer(s). The proposed 80± acres commercial solar facility is likely to include the same equipment as the proposed Project, which includes a transformer that is a source of hazardous waste. Transformers produce used biodegradable dielectric fluid and mineral oil. To reduce the probability for potential impact, the used oil from the transformer must be collected, recycled, and transferred off-site in accordance with local, County, and state law. Proper management of the transformer in compliance with applicable laws and regulations would prevent the release of hazardous materials on-site.

Buildout of the residential units would introduce small levels of hazardous waste use to the property, as described for Alternative 2. Alternative 3 would also rely on the County and Burrtec to provide residents with drop-off and roadside pickup services to properly dispose of household hazardous waste. In accordance with regulatory standards and facilitating services, hazardous waste generated by the residential units would not have a significant impact to the site or surrounding areas.

Alternative 3 would increase the site's susceptibility for hazardous material impacts by the operation of a solar facility which includes a transformer. However, proper maintenance and compliance with law would reduce the probability of impact. Alternative 3 would reduce the probability for impact, because of the smaller scale of development compared to what would be permitted under the proposed Project, but impacts would remain less than significant under all Alternatives or the proposed Project.

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.

Alternative 1: No Project/No Construction

No development of the 477 acre Project site would occur with the implementation of Alternative 1 and consequently, no source of hazardous material would be introduced which, in turn, eliminates the possibility for a foreseeable upset or accidental conditions involving the release of hazardous material into the environment. No impacts from a foreseeable upset would occur as a result of Alternative 1.

Alternative 2: No Project/Existing General Plan

As discussed above, a total of 119 residential units will use cleaners, paints, fertilizer, and other products. None of these hazardous materials will be stored on-site in any significant quantities. These small quantities would not generate a release that would have the potential to affect neighboring sensitive receptors or the environment. Use of these products will be limited, and both the County and the City provide residents with collection services specifically geared to household hazardous waste. Therefore, proper management and use of household hazardous waste would reduce the probability for release or accident to less than significant levels. Given that Alternative 2 results in fewer units and no solar facility, potential unforeseeable upset impacts from Alternative 2 would be marginally lower than that of the proposed Project and Alternative 3.

Alternative 3: Reduced Project Intensity

Construction and operation of Alternative 3 would result in the use of hazardous materials in a manner similar to Alternative 2 for residential uses, but would also include a smaller commercial solar array and the use of a transformer at the site. The use of a transformer results in the potential for an unforeseeable upset, which would be regulated in the same manner as the proposed Project, and include a concrete pad to ensure potential contamination of the soil is avoided. In addition, Alternative 3 would be subject to Mitigation Measures HAZ-1 and HAZ-2, which require implementation of a Management Plan and testing of solar panels prior to disposal, respectively.

Buildout of Alternative 3 would generate new sources of hazardous waste but at a lower intensity than that of the proposed Project. The potential for upset on the site would be low from the residential units, and governed by Mitigation Measures HAZ-1 and HAZ-2 for the reduced solar project. In addition, regulations governing their use and disposal are in place to reduce the potential risk to less than significant levels.

3.10.4 Mitigation Measures

Alternative 1 and 2 would not require mitigation to reduce potential impacts to less than significant levels. Alternative 1 assumes no development on the parcel, and Alternative 2 assumes buildout in accordance with the existing residential designations. These uses would not introduce a significant source of hazardous waste use on-site and therefore, conditions would result in less than significant impacts.

Alternative 3 proposes a commercial solar array at a smaller scale than the Project, and residential development at the same scale than that proposed by the Project. Due to the proposal for a solar array, Alternative 3 would require the same mitigation as the Project to ensure solar panels do not pose a significant environmental risk. Alternative 3 would not require further mitigation.

3.11 Hydrology and Water Quality

3.11.1 Introduction

This section of the EIR analyzes the potential impacts associated with the alternatives to the Proposed Project based on the local hydrological setting and its effect on runoff and water quality. The analysis in this section is based, in part, on the review of existing resources, applicable laws and regulations, and the Hydrology and Hydraulic Technical Study[1] (Appendix H.2), Preliminary Drainage Study[2] (Appendix H.1) and Stormwater Pollution Prevention Plan (Appendix I) prepared for the Solar Project.

A detailed discussion of the relevant regulatory environment can be found in Section 2.11.3.

3.11.2 Existing Conditions

The U.S. Fish and Wildlife Service has identified a series of riverine features flowing from south to north and west to east throughout the site, while the National Hydrography Dataset (NHD) identified one intermittent stream flowing from south to north through the site and one intermittent stream flowing from west to east through the site (Exhibit 2.11-1 Surface Water Features). The project site is encompassed by FEMA Flood Zone X, as identified in FIRM panel 06071C8190J (See Exhibit 2.11-2 FEMA Flood Map). The project site is not vulnerable to sea-level rise, tsunami inundation, or seiche waves.

The site is within the Twentynine Palms Water District (TPWD) domestic water service boundaries which depends entirely on groundwater from two non-adjudicated basins: the Twentynine Palms Valley Basin and the Joshua Tree Basin. The City, including the Project area, does not have a sanitary sewer system and currently operates with septic tanks and package treatment plants.

A detailed discussion of the existing hydrology conditions in the project area can be found in Section 2.11.3.

3.11.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

[1] Hydrology and Hydraulic Technical Study for E-Group PS Solar Project, prepared by Dudek, January 2025.

[2] Preliminary Drainage Report for E-Group PS Solar Project, prepared by Dudek, January 2025.

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

Alternative 1: No Project/No Construction

The No Project/No Construction alternative would leave the subject property in its current state as undeveloped desert land. No new structures or other impermeable surfaces would be constructed, and the site would maintain existing drainage patterns, which are characterized by ephemeral channel features associated with alluvial fans which can change course based on storm strength, soil displacement and wind direction. These channel features would continue to provide drainage and infiltration across the Project site. Alternative 1 would not introduce man-made features and therefore would not violate any water quality standards or waste discharge requirements and would not substantially degrade surface or ground water quality since no change in current conditions would occur. No impact would occur.

Alternative 2: No Project/Existing General Plan

Alternative 2 proposes development of the site as currently designated in the General Plan, resulting in the construction of up to 119 residential units, compared to the 241± acre solar facility and 119 residential units proposed by the Project.

Construction will involve heavy equipment and associated potentially hazardous materials, such as fuels (gasoline and diesel), oils and lubricants, and cleaners (e.g., solvents, corrosives, soaps, detergents), which are commonly used in construction projects. As would be the case for any development effort, disposal of grease and oil would be required to comply with County and RWQCB regulations. The City and RWQCB impose requirements for surface water protection, including the preparation of site-specific SWPPP for surface waters that will protect surface waters from pollutants in storm flows during both construction and long-term operation of the site. Development under Alternative 2 would result in less land disturbance, because of the reduced scale of development, but it would be subject to these requirements, which are designed to reduce impacts associated with surface water pollution to less than significant levels.

All water providers are required to comply with RWQCB standards for the protection of water quality and local aquifers. Alternative 2 would result in the provision of domestic water for the 119 units, and the TPWD would be expected to deliver that water under water quality standards in effect at the time of development.

Effluent from future residential water treatment systems will be contained in on-site septic systems and regulated by RWQCB permits. They are not expected to degrade groundwater quality, as current standards for septic use are tightly regulated by the RWQCB.

Unlike the proposed Project, Alternative 2 does not propose a solar field component which would require implementation of a Spill Prevention, Control, and Countermeasure Plan (SPCCP) described in Section 2.11.6 and required by Mitigation Measures HYD-1. Therefore, Alternative 2 is not subject to Mitigation Measure HYD-1.

As with the proposed Project, adherence to local, state and federal requirements will assure that impacts associated with water quality standards under Alternative 2 are less than significant, with a reduced risk of hazardous spills compared to the proposed Project due to the elimination of the solar field component.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in 80± acres of commercial solar development and up to 119 residential units.

The hydrologic impacts and potential water quality impacts associated with Alternative 3 are essentially the same as those associated with the type of land uses proposed under the proposed Project; however, the intensity of development and the creation of impervious surfaces would be reduced under Alternative 3.

Construction will involve heavy equipment and associated potentially hazardous materials, such as fuels (gasoline and diesel), oils and lubricants, and cleaners (e.g., solvents, corrosives, soaps, detergents), which are commonly used in construction projects. Disposal of grease and oil would be required to comply with County and RWQCB regulations.

As required of the proposed Project, development plans under Alternative 3 will be required to comply with City and RWQCB regulations to minimize the pollutant load associated with urban activities. Meeting those standards requires the preparation and approval of a site-specific SWPPP, which must be approved by the City prior to the initiation of construction activities.

Effluent from residential septic systems will be contained and regulated by RWQCB. Their standards apply to all septic systems to protect groundwater, and they are not expected to degrade groundwater quality. Like the proposed Project, the solar facility in Alternative 3 would not be expected to require domestic water or septic systems.

Alternative 3 would result in the provision of domestic water for the residential units, and the TPWD would be expected to deliver that water under water quality standards in effect at the time of development.

Adherence to standard regulations and implementation of a Spill Prevention, Control, and Countermeasure Plan (SPCCP) for the solar portion described in Section 2.11.6 and required by Mitigation Measures HYD-1, will effectively reduce or avoid the discharge of any pollutants of concern that might enter nearby receiving waters. With the application of mitigation, Alternative 3 will not exceed wastewater discharge requirements, and impacts to water quality will be less than significant.

As with the proposed Project, onsite stormwater runoff associated with Alternative 3 would be comparable, with Alternative 3 proposing a less intense development plan resulting in less impermeable surfaces and more open space that facilitates infiltration. Alternative 3 is not expected to violate any water quality standards or waste discharge requirements and would not substantially degrade surface or ground water quality. With the implementation of Mitigation Measure HYD-1. Impacts will be less than significant and comparable to the proposed Project.

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

Alternative 1: No Project/No Construction

Implementation of Alternative 1 would not change existing conditions on the site, and no development would occur. As a result, this Alternative would not require any groundwater, and the site would continue to infiltrate rainwater into the aquifer.

As shown in Table 3.11-1 and 3.11-2 below, Alternative 1 is projected to generate a net demand reduction of 13.8-acre feet per year, because the residential units currently allowed under the General Plan would not occur.

Alternative 2: No Project/Existing General Plan
Alternative 3: Reduced Project Intensity

According to the TPWD 2020 UWMP, the District maintains an existing and projected annual water supply of 6,995 AF through 2045. The water demands for both Alternative 2 and Alternative 3 were calculated using the same methodology used in Section 2.11.6 for solar, residential, and landscaping

demands. Tables 3.11-1 and 3.11-2 show the net water demands from buildout of the site under each Alternative and the proposed Project compared to buildout under existing conditions. The net demand is based on the change from the existing permitted development intensity currently allowed under the General Plan.

Alternative 2 proposes buildout of the site under existing conditions; therefore, there would be no net water demand increase or decrease over existing General Plan build out. The residential portion of Alternative 3 similarly would not propose any greater density of residential development as compared to existing General Plan build out, and therefore would not result in any net increase in water demand.

As described in Section 2.11, water demand for the 48 units required in the Residential GPA would be transferred from the northerly acreage to the southerly acreage, and no new water demand would be created. The only marginal increase (0.45 AFY) would be associated with the Solar Project. Similarly, Alternative 2 would result in General Plan build out, and would not generate new water demand. Alternative 3 would result in an increase of 0.20 AFY associated with the smaller Solar Project.

Table 3.11-1
Alternative Water Demand Comparisons: Solar and Residential

Scenario	Estimated Dwelling Units (EDU)	Occupants per Home[1]	Gallons per Day (gpd) per Occupant[2]	gpd/ EDU	Water Demand (gpd)	Water Demand (AFY)
Existing Buildout Potential	*119*	*2.47*	*42*	*103.74*	*12,345.1*	*13.8*
Proposed Project	119	2.47	42	103.74	N/A*	14.25
Alternative 1 (Net)	-119 (0 total)	2.47	42	103.74	-12,345.06	-13.8
Alternative 2 (Net)	0 (119 total)	2.47	42	103.74	12,345.1	13.8
Alternative 3 (Net)	0 (119 total)	2.47	42	103.74	12,345.1	13.8
	Solar panel annual water demands: 3.5 liters per panel. The proposed Project assumes 184 AC of the 241 AC solar parcel will be developed. Alt 3 is a 57 percent reduction in acreage, assumes 57 percent reduction in panels from 160,000 to 68,800 panels. 240,800 liters = 63,613 gallons					0.20

[1] CA Department of Finance Table 2: E-5 City/County Population and Housing Estimates, 1/1/24 for the City of Twentynine Palms.
[2] CA Indoor Water Use Performance Standard. Assumes future buildout post 2030.
* Proposed Solar Project demand is 147,936 gallons per year, and will not have a gpd. The Residential GPA gpd is 12,345.1.

Section 2.11 Hydrology and Water Quality concluded that there are adequate water supplies to serve the Project and all other existing and planned future users over the next 20 -years under normal, single-dry year, and multi-dry year scenarios.

Alternatives 2 and 3 would result in a net water demand reduction compared to the proposed Project. For the two development Alternatives, the largest net water demand reduction would be under Alternative 2. None of the Alternatives would have an adverse effect on or impede the function of groundwater management programs in the basin, and 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 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 off-site;

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.

Alternative 1: No Project/No Construction

The No Project/No Construction alternative would leave the subject property in its current state as undeveloped desert land and there would be no alteration of the existing drainage pattern on the subject site or vicinity. This Alternative would not impede or redirect any flood flows. Storm flows currently sheet flow through the site, and flow through existing drainages, which would be anticipated to continue under this Alternative. Alternative 1 would introduce no new sources of erosion or siltation, nor would it increase the amount of surface runoff. Alternative 1 would not change the capacity of any drainage facilities or create new sources of polluted runoff.

Alternative 2: No Project/Existing General Plan; and
Alternative 3: Reduced Project Intensity

The site's current hydrology features four defined ephemeral streams flowing south to north and a larger ephemeral drainage flowing west to east along the northern boundary of the site. As with the proposed Project, the City would require that Alternatives 2 and 3 prepare a hydrology study in conjunction with entitlements to ensure site drainage is designed to reduce potential impacts from flooding. The hydrology study must demonstrate that the Alternative maintains pre-project hydrology and manages any additional flow through retention or

detention; that it manages off-site flows through the site where necessary; that it assures that these flows, when exiting the site, do so in a manner consistent with pre-development conditions; and includes measures which assure that surface waters are not impacted by silt or erosion. A SWPPP would also be required for Alternatives 2 and 3 to address flood hazards and impacts related to erosion, siltation, and pollutant runoff. These standard requirements assure that impacts associated with drainage patterns, siltation and erosion, and off-site flooding remain less than significant.

Alternative 3, because it contains a solar facility, would require the implementation of a Spill Prevention, Control, and Countermeasure Plan (SPCCP) for the solar portion described in Section 2.11.6 and required by Mitigation Measures HYD-1. This measure effectively reduces the impacts of the solar facility in this Alternative to less than significant levels.

Alternatives 2 and 3 would implement City-required BMPs that would reduce pollutants of concern that may enter nearby receiving waters and help reduce short- and long-term water quality impacts caused by the construction and operation of the homes, and solar panels in the case of Alternative 3. As with the proposed Project, approval of the SWPPP, and the required BMPs would reduce impacts to surface waters by reducing erosion, siltation, and eliminating pollutants in storm flows.

Alternatives 2 and 3 will have the same less than significant impacts as the proposed Project, with Alternative 2 having the lesser impact because of the lack of mitigation required to protect against a potential release of hazardous materials from solar facility operations.

3.11.4 Mitigation Measures

Alternative 1 would have no impacts to hydrology or water quality because the site would remain in its existing condition and therefore requires no mitigation or the implementation of regulatory requirements.

The design process for Alternatives 2 and 3 would be comparable to that conducted for the proposed Project, taking into consideration the potential impacts to the local hydrology, water supplies and water quality. Similar to the proposed Project, any potential impacts to existing ephemeral streams would be evaluated. However, Alternative 3 would result in a smaller solar facility east of the ephemeral drainage being bridged by the Solar Project, and would be unlikely to impact that drainage with residential development. It is anticipated that the Alternatives would have a similar impact to other onsite hydrological functions.

Construction mitigation set forth in Section 2.11.7 includes the preparation of a Spill Prevention, Control, and Countermeasure Plan (SPCCP) (Mitigation Measures HYD-1), which would also be required for the solar portion of Alternative 3. For Alternatives 2 and 3 and the proposed Project, approval of the required SWPPP, and the required BMPs would reduce impacts to surface waters by reducing erosion, siltation, and eliminating pollutants in storm flows, ensuring impacts would be below levels of significance.

3.12 Land Use / Planning

3.12.1 Introduction

This section of the EIR evaluates the compatibility of and potential impacts from implementation of the three Project alternatives. As with the proposed Project, the Alternatives' land use compatibility has been assessed using existing planning documents and land use regulations.

A detailed discussion of the relevant regulatory environment can be found in Section 2.12.3.

3.12.2 Existing Conditions

The ±477-acre project site is currently vacant and consists of undeveloped desert land. According to the City's General Plan Land Use map, the northern 360 acres of the site is designated Rural Living (RL-5), and the southern 117 acres of the site is designated Single-Family Residential Estate (RS-E)

Please see Section 2.12.4 for a detailed description of the existing land use conditions relevant to the planning area.

3.12.3 Alternatives Impact Analysis

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.

Alternative 1: No Project/No Construction

Alternative 1 proposes no development, instead maintaining the site's existing condition as vacant desert land. There would be no new construction associated with this Alternative, but it would also not implement the General Plan's current vision for the Project site, which is for large-lot residential development in this part of the City.

Alternative 2: No Project/Existing General Plan

Alternative 2 proposes development of the site as currently designated in the General Plan resulting in the construction of 72 single family homes on the 360± acres of RL-5 designated land, and 47 single family homes on the 117± acres of RS-E designated land, for a total of 119 residential units. Unlike the proposed

Project, development of Alternative 2 would require neither a GPA nor Conditional Use Permit (CUP) to implement. Based on existing land use and zoning designations, this Alternative would have no impact on land use and planning, since it would implement the General Plan. When compared to the other alternatives and the Project, Alternative 2 has the least land use impacts.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in 80± acres of commercial solar development and up to 119 residential units, requiring General Plan and Zoning map amendments to create a new Renewable Energy (E) land use district for the solar portion on the northern half of the eastern parcel, and to redesignate 20 acres of the southern half of the eastern parcel to Single Family Residential (RS-1). The balance of the site would be developed under the current residential designations.

Similar to the proposed Project, Alternative 3 would require a GPA to add a Renewable Energy land use and redesignate the northern 80± acres of the eastern parcel to "E," and would result in the development of a solar field. Development under the RS-1 designation on the 20 acres south of Samarkand Drive would not increase the total units constructed at General Plan build out, but would result in marginally denser residential development on the 20 acres. Development on the western parcel would consist of large-lot single family homes, consistent with the General Plan and the surrounding land use designations. Based on the analysis of General Plan policies provided in Section 2.12, Alternative 3 would have similar, and less than significant impacts associated with land use and planning when compared to the Project, and somewhat greater impacts than Alternative 2.

3.12.4 Mitigation Measures

Impacts associated with consistency with General Plan and zoning standards would be less than significant, except for Alternative 1, which would not implement the General Plan's vision for this area of the City.

3.13 Noise

3.13.1 Introduction

The following section analyzes the potential noise impacts associated with the implementation of the Project alternatives.

3.13.2 Existing Conditions

The Project's proposed 477± acre site is undeveloped and unoccupied, and there are no existing noise sources on-site. Existing noise sources in the Project area include traffic from surrounding roadways and scattered single family residences. Two Mile Road is identified in the General Plan as a major corridor generating a 60 CNEL noise contour that extends to the property's southern parcel under City build out conditions.

There are no sensitive receptors within immediate proximity to the Project site. The nearest are residential units located beyond Sunrise Road and 1,618± feet from the Project's eastern boundary.

Please see Section 2.13 for a detailed description of the regulatory framework and existing noise conditions relating to the planning area.

3.13.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

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;

Alternative 1: No Project/No Construction

Alternative 1 proposes no development and would instead maintain the site's existing condition as undeveloped desert land and would result in no new impacts related to noise. Alternative 1 would involve no new construction or operational noise sources. Overall, this alternative would result in no increase in ambient noise levels, and there would be no impacts.

Alternative 2: No Project/Existing General Plan

Alternative 2 proposes development of the site as currently designated in the General Plan resulting in the construction of 119 residential units. As with the proposed Project, Alternative 2 would generate new sources of noise temporarily during construction, as well as long-term noise from residential activities and increased traffic volumes. Construction would comply with applicable noise control standards designed to protect sensitive land uses from adverse noise impacts, including the City's restrictions on construction activities.

During operation, residential development would generate noise from mobile and stationary sources. Traffic generated by the 119 homes would be consistent with the General Plan predictions for noise, insofar as future noise levels were modeled based on this Alternative's land use distribution. Thus, traffic noise on Two Mile Road would be at 60 dBA within 50 feet of the centerline of the roadway, which is lower than the 65 dBA adopted as the City's standard for outdoor noise levels for residential uses. In addition, as it relates to stationary sources such as air conditioners, stationary equipment and similar sources, all residential development would be required to comply with the City's noise standard for residential uses that sets an interior noise level at 45 dBA and exterior level at 65 dBA. Compliance with City standards will be mandatary and thus minimize adverse effects to on-site and off-site sensitive receptors. Because this Alternative is consistent with the land uses analyzed in the General Plan and its EIR, noise levels would be below the City's thresholds for sensitive receptors, and would be less than significant.

The lower land use intensity proposed under Alternative 2 would be expected to generally generate marginally lower noise levels than the Project as proposed. As with the proposed Project and Alternative 3, noise levels generated by Alternative 2 are not expected to significantly impact the environment.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in 80± acres of commercial solar development and up to 119 residential units. As with the proposed Project and Alternative 2, Alternative 3 would generate new sources of noise temporarily during construction and long-term noise generated by residential housing units, the solar facility, and increased traffic volumes. Construction would comply with applicable noise control standards designed to protect sensitive land uses from adverse noise impacts, including restrictions in the Municipal Code relating to hours of construction.

During operation, all residential development would be required to comply with the City's noise standard for residential uses that sets an interior noise level at 45

dBA and exterior level at 65 dBA, at all times of the year. Single family homes do not generate excessive noise, nor would excessive noise be expected to occur during the life of a residential subdivision. Compliance with City standards will be mandatary and thus minimize adverse effects to on-site and off-site sensitive receptors.

For the solar facility in Alternative 3, long term noise will be caused by on-site inverters and a transformer. The location of the transformer would be anticipated to be in the same location as the proposed project, on the eastern half of the northern parcel. Similar to the Solar Project, as described in Section 2.13, the noise levels generated by the transformer would not impact surrounding existing sensitive receptors located more than 1,400 feet from the site. As determined by the analysis in Section 2.13.6, these sources of noise would marginally contribute to the local noise level, be below detectable levels to nearby receptors, and result in noise levels below the City's standard of 65 dBA for residential receptors. Similar to Alternative 2, development of residential uses would be similar in character as that permitted under the General Plan, and would be expected to generate similar noise levels. As with the proposed Project or Alternative 2, noise levels generated by Alternative 3 are not expected to significantly impact the environment.

b) Generation of excessive groundborne vibration or groundborne noise levels;

Alternative 1: No Project/No Construction

Alternative 1 proposes no development and would instead maintain the site's existing condition as undeveloped desert land and would result in no new impacts related to groundborne vibration or noise. Alternative 1 would involve no new construction or operational groundborne vibration or noise sources. There would be no impacts.

Alternative 2: No Project/Existing General Plan

Alternative 2 would result in the construction of 119 residential units. On-site activities related to construction will result in groundborne vibration. As with the proposed Project, all development would be required to comply with the City's vibration standard as mandated by Municipal Code Section 19.80.100 (Vibration). Given the size of the parcels, the lesser grading required and the distance from sensitive receptors, construction vibration would be expected to be imperceptible off-site. Any potential impact will be further minimized by the City's prohibition against construction during sensitive nighttime hours. No sources of vibration are expected during operation, since residential development does

not involve heavy equipment. Therefore, no adverse effects would be imposed on nearby sensitive receptors because of Alternative 2.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in the construction of 119 residential units and 80± acres of commercial solar development. On-site activities related to construction will result in groundborne vibration to a greater extent than Alternative 2, because mass grading of the solar facility component of this Alternative would be required, while residential development on large lots would not be expected to require mass grading. As with the proposed Project, all development would be required to comply with the City's vibration standard as mandated by Municipal Code Section 19.80.100 (Vibration). Any potential impact will be further minimized by the Project's avoidance of sensitive nighttime hours for on-site and off-site construction. No sources of vibration are expected during operation of this Alternative. Therefore, no adverse effects would be imposed on nearby sensitive receptors because of Alternative 3.

3.13.4 Mitigation Measures

All alternatives would result in less than significant impacts related to noise and vibration, and mitigation is not required.

3.14 Population and Housing

3.14.1 Introduction

The following section discusses the potential impacts of the Alternatives on population growth and housing. As with the proposed Project, the analysis in this section is based, in part, on data and information from a variety of sources and agencies including the Twentynine Palms General Plan, the Southern California Association of Governments, and the U.S. Census Bureau.

3.14.2 Existing Conditions

According to the United States Census Bureau 2019-2023 American Community Survey (ACS) 5-year estimates, the City of Twentynine Palms has a 2023 population of 28,734 and 9,726 households.[1]

The 477-acre site is currently vacant and undeveloped. The City's Land Use and Zoning Map designates the project site's northern 360 acres as Rural Living (RL-5, 0.2 DU/AC) and the southern 117 acres as Single-Family Residential – Estate (RS-E, 0.4 DU/AC). In total, the General Plan currently permits a maximum buildout of 119 single-family dwelling units.

Please see Section 2.14 for a detailed description of the regulatory framework and existing conditions related to population and housing, as it relates to the planning area.

3.14.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

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)?

[1] *QuickFacts: Twentynine Palms city, California*. (2024). Census Bureau QuickFacts; United States Census Bureau. https://www.census.gov/quickfacts/fact/table/twentyninepalmscitycalifornia/HSD410223#HSD410223

Alternative 1: No Project/No Construction

Alternative 1 proposes no development, instead maintaining the site's existing condition as vacant desert land. No population growth would be induced either directly by the development of new homes, or indirectly by the extension of roads of other infrastructure. It would therefore have no impacts related to unplanned population growth.

Alternative 2: No Project/Existing General Plan

Alternative 2 proposes development of the site as currently designated in the General Plan, resulting in the construction of 72 single family homes on the northerly 360± acres of RL-5 designated land, and 47 single family homes on the southerly 117± acres of RS-E designated land, for a total of 119 residential units. Assuming an average household size of 2.47 persons,[2] occupancy of the 119 residential units under Alternative 2 could directly yield a population of 294 residents. This population does not represent new or unplanned growth, as the development aligns with the General Plan's land use designations for the site, and the projected population's impacts have already been evaluated in the General Plan EIR. By comparison, the proposed Project would introduce an additional 119 residential units, potentially generating a population increase of 294 new residents. The population generation of Alternative 2 and the proposed Project are consistent.

As with the proposed Project, minor utility extensions will be required to extend service laterals from existing lines into the project site from the adjacent rights-of-way, and local roads would need to be built to access the homes. These improvements would only serve the Project site and would not impact regional population growth. Alternative 2 would also require the improvement of surrounding General Plan roadways, including Samarkand and Amboy Roads. Two Mile Road would also require half-width improvements to its General Plan build out condition. Unlike the proposed Project, deferred construction would be unlikely, since the homes would likely require access to these roadways to allow adequate circulation and emergency access. As a result, Alternative 2 would result in increased access to surrounding lands when compared to the proposed Project. Given that the growth is planned in the General Plan, however, this growth is unlikely to be unplanned, and would not exceed that proposed in the General Plan currently.

[2] CA. Department of Finance, Table 2: E-5 City/County Population and Housing Estimates, 1/1/2024. City of Twentynine Palms.

Overall, Alternative 2 would not result in unplanned population growth, as it is consistent with the General Plan's land use designations for the site and therefore consistent with the City's population growth projections.

Alternative 3: Reduced Project Intensity

Alternative 3 would induce population growth from new homes consistent with that expected from the proposed Project or Alternative 2. Alternative 3 would result in 80± acres of commercial solar development and up to 119 residential units, as would the Project and Alternative 2, with a greater density of homes located on the south half of the eastern parcel. Assuming an average household size of 2.47 persons,[3] occupancy of the 119 residential units under Alternative 3 would be 294, consistent with the population of the Project and Alternative 2.

As discussed in Section 2.14.6, the General Plan projects a buildout population of 103,275 by 2032, based on a 20-year forecast from 2012. Compared to the 2023 Census population of 28,734, achieving this buildout would require a 259% population increase over the 9 years from 2023 to 2032. However, growth according to current Census data (28,734) and SCAG projections (33,300 by 2045) shows a growth of approximately 15.9% over a 22-year period. Therefore, growth associated Alternative 3 would not change the anticipated growth pattern, less growth has occurred in the wider planning area than anticipated in the General Plan, and the growth resulting from Alternative 3 would be within the growth projected by the City or SCAG. Impacts would therefore be less than significant.

Alternative 3 would result in new local roads for development, but would have less surrounding road construction because the solar facility would be expected to defer roadway construction on at least Samarkand Drive and Amboy Road. Like the proposed Project and Alternative 2, Samarkand and Two Mile Roads would be developed to their General Plan build out configuration, which would allow development on surrounding parcels. As will Alternative 2, however, the limited development allowed on these surrounding lands would not result in unplanned or substantial growth beyond that proposed in the General Plan, and population increases would be consistent with both City and SCAG projections.

3.14.4 Mitigation Measures

None of the Alternatives would have a significant adverse effect on area or regional population or housing, and no mitigation measures are required.

[3] CA. Department of Finance, Table 2: E-5 City/County Population and Housing Estimates, 1/1/2024. City of Twentynine Palms.

3.15 Public Services

3.15.1 Introduction

Section 3.15 evaluates the potential impacts on public services associated with the construction and operation of each of the three Alternatives. The analysis considers whether the alternatives would affect the ability of public service providers, including fire, police protection, schools, and parks, to maintain acceptable levels of services to the Project area and whether the impacts warrant the need for new or expanded facilities.

3.15.2 Existing Conditions

The City of Twentynine Palms contracts with the San Bernardino County Fire Department (SBCoFD) for fire protection services such as fire suppression, emergency medical services, hazardous materials waste management services, and community education programs. For law enforcement services, the City contracts with the San Bernardino County Sheriff's Department. The Morongo Unified School District provides public school services to the City. Finally, the City's Community Services Department manages the City's parks, special use areas, and recreational programs.

Section 2.15 and 2.16 provide detailed descriptions of these public services and associated regulatory programs.

3.15.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

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:

Alternative 1: No Project/No Construction

Alternative 1 proposes that neither a commercial solar facility nor any residential units would be constructed on the Project site and existing conditions on the undeveloped site would be preserved. As a result, no new demand would occur,

and this Alternative would have no impact on public services, including fire, police, schools or parks.

Alternative 2: No Solar Project/Existing General Plan

Alternative 2 proposes that only single family residential units would be constructed on the 477-acre Project site as approved by the City's General Plan. Residential build out would result in the construction of 119 single family homes and potentially add 294 residents.[1]

- ***Fire Protection***

Commensurate with the City's pace of growth, these homes would likely be constructed over several years rather than as a single subdivision project. Nevertheless, the addition of 119 homes to the City would gradually increase the demand for fire protection services. Compensation for these services is paid directly to the SBCoFD by residents and property owners of Twentynine Palms through property taxes, hence, the provision of acceptable levels of services is proportionate with City growth. Therefore, the incremental increase in population associated with Alternative 2 would compensate the fire department for the incremental increase in services to the Project site. Impacts to fire protection services resulting from Alternative 2 would be less than significant.

- ***Police Protection***

According to the 2020 Decennial Census, the population of Twentynine Palms was 28,065. Alternative 2 could add 294 new residents and increase the City's population by 1%.[2] Law enforcement services for the City are funded by the City's property tax revenue. The property tax revenue earned from the new residences would contribute on-going operational funding and would offset the potential impacts to the provision of police services to the Project site. Impacts to police protection resources would be less than significant.

- ***Schools***

An estimated 38.2% of Twentynine Palms households have one or more school-aged children under the age of 18.[3] Based on this estimate, approximately 46 of the 119 homes may be expected to have school-aged children, which would add at least 46 students to the local Morongo Unified School District enrollment.

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1 California Department of Finance, "City/County Population and Housing Estimates, Table 2" January 1, 2024.

2 US Census Bureau, "2020 Decennial Census, Table P1," https://data.census.gov/table/DECENNIALPL2020.P1?g=160XX00US0680994, accessed March 2025.

3 US Census Bureau, American Community Survey 5-Year Estimates, Table DP02, https://data.census.gov/table/ACSDP5Y2023.DP02?g=160XX00US0680994, accessed March 2025.

Projects are subject to MUSD developer fees, which are calculated on a square-foot basis. The fee for a residential project would be calculated when a site plan is available. As described in Section 2.15, the school developer fees are designed to mitigate any impacts associated with a project's added student enrollments. Therefore, Alternative 2 impacts to schools would be less than significant.

- ***Parks (see Section 3.16)***

The City maintains a level of service of 4.2 acres of parkland per 1,000 residents, and the City's General Fund supports parks facilities, maintenance, recreational and community services. These services have recently comprised between 13% and 14% of the City's operating expenditures.[4] Approximately 24% of the property tax revenue from the Alternative 2 residential development would be allocated to the City's General Fund, thus, potential impacts to the City's recreational and community services would be offset by new property tax contributions. Impacts would be less than significant. A more detailed discussion of impacts is available in the Recreation Resources Section 3.16.

Alternative 3: Reduced Project Intensity

Alternative 3 proposes to construct a reduced commercial solar facility of 80 acres on the east parcel (APN 0612-201-05) north of Samarkand Drive. South of Samarkand Drive, 20 acres would be redesignated as a higher density residential zone, RS-1. The balance of the site would develop as currently designated in the General Plan. In total, this Alternative would result in 119 residential units.

- ***Fire Protection***

The 80-acre solar facility would be an unmanned site during the operational phase. Project site plans would be subject to review and approvals by the SBCoFD to ensure that emergency vehicles would have access throughout the site. In Twentynine Palms, property owners directly pay the SBCoFD for fire protection services through property taxes, and the solar facility would be subject to this payment system. Costs are commensurate with services provided and would offset the cost of responding to an incident at the property.

The homes permitted under this Alternative would increase the demand for fire protection services consistent with the increase expected for the Project and Alternative 2. As explained above, City property owners directly pay the SBCoFD for services, and fire protection services are compensated in direct proportion to the City's growth, which allows the fire department to maintain an acceptable level of service. Therefore, while build out would increase the demand for fire

[4] Personal communication, Ms. Abigail Hernandez Conde, CPA, Finance Director, City of Twentynine Palms, February, 2025.

protection services, the costs of the services would be paid by those residents. Impacts to fire protection services resulting from Alternative 3 would be less than significant.

- ***Police Protection***

The unmanned solar facility under Alternative 3 would be enclosed with chain-link fencing topped with barbed wire. Demand for law enforcement services to service the facility would be expected to be minimal. Alternative 3 would generate increased property tax from both the solar facility and the residential development, a portion of which would flow to the City's General Fund to offset costs of police services. Impacts to law enforcement services are expected to be less than significant.

- ***Schools***

Alternative 3 would include an unmanned solar facility which would not generate new population, and therefore would have no impact on school enrollment. Of the 119 total new homes permitted under Alternative 3, approximately 46 may be expected to have school-aged children, which would add at least 46 students to the local Morongo Unified School District enrollment The school developer fees imposed by State law would mitigate any impacts associated with the Project's added student enrollments. Impacts would be less than significant.

- ***Parks (see Section 3.16)***

The City maintains a level of service of 4.2 acres of parkland per 1,000 residents, and the City's General Fund supports parks facilities, maintenance, recreational and community services. These services have recently comprised between 13% and 14% of the City's operating expenditures.[5] Approximately 24% of the property tax revenue from the Alternative 3 residential development would be allocated to the City's General Fund, thus, potential impacts to the City's recreational and community services would be offset by new property tax contributions. Impacts would be less than significant. A more detailed discussion of impacts is available in the Recreation Resources Section 3.16.

[5] Personal communication, Ms. Abigail Hernandez Conde, CPA, Finance Director, City of Twentynine Palms, February, 2025.

3.16 Recreational Resources

3.16.1 Introduction

This section of the EIR analyzes the potential impacts of the Alternatives on recreational resources, including parks, recreational facilities, and trails. The analysis considers whether and to what extent buildout of the alternatives and their associated populations would have on these local and regional parks and other recreational facilities.

3.16.2 Existing Conditions

The City owns, manages, and operates five parks that total to 72.1 acres. The City also has a trail system comprised of multi-purpose pedestrian, equestrian, and bicycle trails.

The General Plan sets a minimum level of service standard at 4.2 acres of parkland for every 1,000 residents. Under the Community Trail Master Plan, the City established a standard of 3-miles of non-motorized trails per 1,000 residents. Based on the City's 2014 trail system, the City provided approximately 0.43 miles of trail per 1,000 residents. With implementation of the Master Plan, the City is projected to provide 3.5± miles of non-motorized trails per 1,000 residents.

Please see Section 2.16 for a detailed description of the regulatory framework and existing conditions relating to recreational resources in the project area.

3.16.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

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?

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?

Alternative 1: No Project/No Construction

Alternative 1 proposes no development and would instead maintain the site's existing condition as undeveloped desert land. Overall, Alternative 1 would not contribute any demand for parks, recreational facilities, or trails, nor would it result in any environmental impacts associated with the construction or expansion or such facilities, since no added population would occur. There would be no impacts.

Alternative 2: No Project/Existing General Plan

Alternative 2 proposes development of the site as currently designated in the General Plan resulting in the construction of 119 residential units and a population of 294 residents. This population does not represent new or unplanned growth, as the development aligns with the General Plan's land use designations for the site, and the projected population's impacts on recreational facilities have already been evaluated in the General Plan EIR.

As with the proposed Project, future residential development resulting from Alternative 2 would increase property tax revenues to the City, thus facilitating the City's incremental expansion and/or construction of recreational facilities as the demand for facilities increases.

Overall, Alternative 2 would not lead to substantial, unanticipated increases in the use of existing recreational facilities that would accelerate their physical deterioration or necessitate the construction or expansion of off-site parks and recreational infrastructure. The payment of applicable development fees and property taxes would proportionately offset any increased demand on existing facilities, corresponding to the number of residential units developed. Alternative 2 would therefore result in less than significant impacts to parks and recreational facilities, with impacts comparable to those of the proposed Project due to the contribution of required fees.

Alternative 3: Reduced Project Intensity

Alternative 3 would result in 80± acres of commercial solar development and up to 119 residential units and 294 people. As with the proposed Project and Alternative 2, future residential development under Alternative 3 would also increase property tax revenues to the City, thus facilitating the City's incremental expansion and or construction of recreational facilities as the demand for facilities increases. Under this Alternative, the solar facility would also contribute property tax revenue increases, which the City could choose to use toward recreation programs.

Overall, Alternative 3 would not lead to substantial increases in the use of existing recreational facilities that would accelerate their physical deterioration or necessitate the construction or expansion of off-site parks and recreational infrastructure. The payment of applicable development fees and property taxes would proportionately offset any increased demand on existing facilities, consistent with the Project and Alternative 2. Alternative 3 would therefore result in less than significant impacts to parks and recreational facilities, with impacts comparable to those of the proposed Project and Alternative 2 due to the proportional contribution of required fees.

3.16.4 Mitigation Measures

All alternatives would result in less than significant impacts, and mitigation is not required.

3.17 Transportation and Traffic

3.17.1 Introduction

This section of the EIR analyzes the potential impacts associated with the Project alternatives based on regional and local transportation conditions. It briefly describes existing conditions of the local transportation network and traffic volume within Twentynine Palms and analyzes the potential impacts of the alternatives on the surrounding transportation system and future long-term traffic conditions.

3.17.2 Existing Conditions

The Project site is 477± acres of undeveloped desert land in the northwest portion of the City. Transportation corridors that bound the Project site include Two Mile Road to the south, Lear Avenue to the west, and Sunrise Road to the east. These corridors vary in improvement, with Two Mile Road and Lear Avenue being paved roadways, and Sunrise Road being a dirt road. None of the surrounding roadways are built out to General Plan standards.

Within this area, access to public transportation is limited. There are no bus routes or bus stops in the area, nor are there bike paths or sidewalks.

The City Circulation Plan proposes future buildout and improvements of Samarkand Drive, Amboy Road, and Noels Knoll Road. Once implemented, Samarkand Drive will include two paved travel lanes, curb and gutter, and pedestrian sidewalk. Amboy Road and Noels Knoll Road would include four travel lanes, as well as pavement, curb and gutter, and sidewalks.

For a detailed report on existing transportation conditions within the Project area, see Section 2.17.5 in this EIR.

3.17.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

Alternative 1: No Project/No Construction

Alternative 1 proposes no development on the Project site and, as such, potential conflicts with the City circulation plan, programs, policies, or ordinances will not occur. Although no impact to the City's circulation system or plan would occur in relation to Alternative 1, it would also preclude the orderly development of the General Plan's circulation system, and impact overall connectivity in the City in the long term. From this perspective, Alternative 1 could impact the Circulation Element's policies and programs.

Alternative 2: No Project/Existing General Plan

In accordance with the City General Plan land use policy, Alternative 2 would result in residential development, consistent with the parcel's existing land use. At buildout, the 477± acre parcel would include 72 residential units on 360± acres of RL-5 land and 47 residential units on 117± acres of RS-E land. In addition to residential construction, the Alternative would also require development of General Plan roadways along the perimeter of the property, and an internal roadway system to provide adequate access to the site. These on- and off-site improvements would occur in compliance with the City Circulation Element for Two Mile Road, Samarkand Drive, Amboy Road, and Noels Knoll Road. When compared to the Project, this Alternative would have fewer impacts on the build out of the City's circulation system, and a lower and still less than significant impact on City policies.

When development is proposed, the City will determine whether that project needs to prepare a traffic impact analysis based on City standards, and as mandated by the City Circulation Element Policy 1.6. However, given that this Alternative is consistent with the General Plan, and the impacts of its development were studied in the General Plan EIR, it is not expected that this Alternative would have a significant impact on either Level of Service policy compliance, or vehicle miles traveled.

Alternative 2 would comply with all applicable policies, standards, and plans addressed in the City Circulation Element, especially in regards to the improvement of Two Mile Road, Samarkand Drive, Amboy Road, and Noels Knoll Road. Alternative 2 would not result in any conflicts with existing policies or standards. Therefore, no impacts associated with conflicts with plans and policies would occur.

Alternative 3: Reduced Project Intensity

Alternative 3 assumes a smaller Solar Project size with 80± acres of commercial solar development and a GPA for 20 acres of the southern half of the eastern parcel to RS-1, resulting in 119 total build out units.

It is assumed that the 80± acre solar facility would defer responsibility for roadway improvements and that the build out of these roadways would be completed by future developers as permitted by Section 19.90.070 (Street Dedications and Improvements—Delay or Deferral) of the City Municipal Code. In doing so, the solar component of this Alternative would avoid conflicting with the City's policies, programs, plans, and ordinances governing the circulation system and associated road improvements. Similar to the proposed Project, vehicle trips during operation of the solar facility allowed under this Alternative would be limited to maintenance trips which would not occur on a daily basis, and would not significantly add significant trips or VMTs to the City's roadway system.

Buildout of the site for residential use would require an internal roadway system as well as road improvements to provide adequate access to the residential area, consistent with both Alternative 2 and the proposed Project. Therefore, off-site road improvements would be necessary as part of residential buildout. These improvements would occur in accordance with the City Circulation Element policies including Policy 1.11, 3.2, and 6.5, as well as City standards. Given that Alternative 3 proposes the same overall amount of residential development as Alternative 2, the traffic and transportation impacts are expected to be similar to those described above.

No significant impact to the City's circulation system nor any violation of applicable standards, policies, plans, or programs regarding road improvements or traffic standards would occur in relation to the residential development. Implementation of Alternative 3 would have a less than a significant impact on General Plan policies, standards and codes.

b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b).

Alternative 1: No Project/No Construction

Alternative 1 proposes that the site remains undeveloped. Therefore, the vacant parcel would not generate vehicle trips which would otherwise be subject to CEQA Guidelines in Section 15064.3(b), which requires VMT analysis to assess traffic impacts from daily vehicle trips generated by development. Alternative 1 would not generate daily vehicle trips and thus would not conflict with CEQA guidelines.

Alternative 2: No Project/Existing General Plan
Alternative 3: Reduce Project Intensity

In accordance with CEQA Guidelines in Section 15064.3(b), all proposed projects (unless exempt) would be required to prepare a VMT analysis based on the City's adopted VMT policy, which is consistent with San Bernardino County's adopted policy but adapted for the City's conditions.

Under Alternative 2, development would occur consistent with existing General Plan land use designations, and consistent with the units predicted for the site in the General Plan. As such, this alternative would be expected to generate VMT consistent with the VMT anticipated for the City as a whole, given that the land use designations and potential units have been considered in the City-wide VMT calculations and the per resident VMT extrapolations. Impacts associated with this Alternative would be expected to be less than significant.

Under Alternative 3, there would be 80 acres of land which would not generate appreciable VMT, given that the solar facility would be unmanned. Also under this Alternative, up to 119 residential units could occur. As with Alternative 2, the VMT resulting from this Alternative would be consistent with that anticipated in the General Plan, given no change in build out units.

Under either Alternative VMT impacts, like those of the proposed Project, would be expected to be less than significant, because the residential units are consistent with those currently envisioned for the General Plan.

d) Result in inadequate emergency access.

Alternative 1: No Project/No Construction

Alternative 1 would result in no development occurring on Project site and thus, emergency access would not be required as part of its implementation. No conflicts with the City's General Plan safety policies or City's Municipal Code Section 18.04.320 (Shared Emergency and Fire Apparatus Access Roads) would take place. As such, no impacts from inadequate emergency access would result from Alternative 1.

Alternative 2: No Project/Existing General Plan
Alternative 3: Reduce Project Intensity

As required for all proposed projects, including Alternative 2 and 3, clear and unobstructed access during construction and operation so as to provide on-site workers and/or occupants with an evacuation route will be required by the City.

Similarly, the Fire and Police Departments must be provided with an access road to be used in the event of an emergency. Both Alternatives would be expected to improve City General Plan roads, and thereby provide paved access for future residents. Compliance with safety standards will be evaluated by the Fire Department and Sheriff and thus, no conflict or violation would occur under either Alternative. Alternative 2 and Alternative 3 would not result in inadequate access in the event of an emergency and, as such, no impacts would occur.

3.17.4 Mitigation Measures

None of the Alternatives would be expected to have significant impacts, and none would require mitigation.

3.18 Tribal Cultural Resources

3.18.1 Introduction

This section of the EIR evaluates potential impacts to tribal resources associated with the three proposed Alternatives. Significant tribal resources are either listed or eligible for listing in the California Register of Historical Resources, or in a local register. Tribal resources may also be determined by a project lead agency to be significant in accordance with Public Resource Code Section 5024.1. This section is closely associated with Section 3.6 and relies upon the Cultural Resources Inventory and Evaluation Report prepared by Dudek[1] (Cultural Report), which is available in Appendix E of this EIR.

3.18.2 Existing Conditions

The site is currently vacant and undeveloped. Cultural resource assessments were conducted for the Solar Project, and identified the potential for resources to be uncovered by Project activities. In addition, in compliance with AB 52 and SB 18, 14 Native American Tribes were contacted, and their input was requested. Five tribes responded, and these responses are described in Section 2.18 of the EIR.

To mitigate any potentially significant impacts to undiscovered tribal resources, an Archaeological and/or Tribal Resource Discovery and Documentation plan would be required for the Project (CUL-1 and CUL-2).

3.18.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 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

[1] Cultural Resources Inventory and Evaluation Report for the E-Group PS Solar Project, prepared by Dudek, January 2025.

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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Alternative 1: No Project/No Construction

Alternative 1 proposes that neither a commercial solar facility nor any residential units would be constructed on the subject site. Existing conditions on the undeveloped subject site would be preserved under Alternative 1. There would be no adverse impacts to any potentially significant tribal resources. No impacts would occur.

Alternative 2: No Solar Project/Existing General Plan

Alternative 2 proposes that only the residential units planned in the City's General Plan would be constructed on the 477-acre subject site. Residential build out per the General Plan would be consistent with existing nearby residential development. For the area north of Samarkand Drive, the Cultural Report found that development would not significantly impact potentially occurring tribal resources with the implementation of Mitigation Measure CUL-2, which requires monitoring during construction activities. As identified in Section 2.6 and 2.18, the area south of Samarkand is expected to have similar conditions as the Solar Project land, and would also require a cultural resources survey, and likely require monitoring. Adherence to the mitigation measures described in Section 2.6 of the EIR would ensure that any potential impacts to surficial and buried tribal resources would be less than significant, consistent with both the Project and Alternative 3.

Alternative 3: Reduced Project Intensity

Alternative 3 proposes a reduced commercial solar facility of 80 acres and residential units on the balance of the site. For the area north of Samarkand Drive, the Cultural Report found that development would not significantly impact potentially occurring tribal resources with the implementation of Mitigation Measure CUL-2, which requires monitoring during construction activities. For portions of the site subject to future residential development that were not evaluated in association with the Solar Project, the project would be required to prepare a separate cultural resources report (CUL-1) and implement Tribal monitoring requirements (CUL-2). With incorporation of these mitigation measures, impacts associated with Alternative 3 would be less than significant.

3.18.4 Mitigation Measures

Mitigation measures are provided in section 2.6, Cultural Resources, as CUL-1 and CUL-2. The measures ensure that impacts to any resources of significance to California Native American tribes that are unearthed during construction of the Project, Alternative 2, or Alternative 3, are less than significant.

3.19 Utilities and Service Systems

3.19.1 Introduction

This section of the EIR evaluates the potential for the Alternatives to directly affect utility services. Utility systems include water, wastewater, and solid waste facilities, as well as electricity, natural gas, and telecommunication services within the City.

3.19.2 Existing Conditions

The Project site (477 acres) is currently undeveloped desert land, part of a larger undeveloped region of the City's northwest. Nearby development is limited to primarily single-family residential units, and public facilities. These existing structures are connected and serviced by local utility providers, which include those listed in the table below.

SERVICE	UTILITY PROVIDER
POTABLE WATER	Twentynine Palms Water District
SOLID WASTE COLLECTION	Burrtec Waste Industry Inc.
ELECTRICITY	Southern California Edison
NATURAL GAS	Southern California Gas Company
TELECOMMUNICATION	Spectrum & Verizon

No sewer collection or treatment service is offered or available to development in the City. Therefore, all wastewater collection occurs on-site and within package treatment plants or septic tanks.

No utility infrastructure currently exists on-site or in service of the property. In the vicinity of the site, there is utility infrastructure including an aboveground water reservoir near the southeast corner of Sunrise Road and Samarkand Drive, and power lines along Sunrise Road and Two Mile Road to the south. Southern California Edison operates a transmission network at the Carodean Substation at the southeast corner of Two Mile Road and Canyon Road. Other utility connections primarily consist of local distribution lines to service individual parcels to the east and south.

See Section 2.19.5 in this EIR for a detailed report on existing utility conditions within the Project area.

3.19.3 Alternatives Impact Analysis

The following addresses the same thresholds of significance as those provided in Section 2 of this EIR.

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. (see Section 2.10 addressing stormwater)

Alternative 1: No Project/No Construction

Alternative 1 assumes no development will occur on-site and thus the parcel will remain vacant. Under this scenario, the site would not generate a utility demand from any local service provider. Alternative 1 would not warrant the relocation or construction of new utility connections or facilities. No environmental impacts related to the extension of these utility services would occur.

Alternative 2: No Project/Existing General Plan

Alternative 2 proposes development in accordance with the City General Plan land use designations which would result in 119 residential units. Given that the site is undeveloped, the proposal for residential development on-site would require the extension of utility lines and services. The following qualitatively assesses the potential for environmental impact from utility construction in comparison to the proposed Project.

Domestic Water System
Implementation of Alternative 2 has been accounted for in TPWD's projected water demand at City buildout, which assumes water demand related to the City's adopted land use, consistent with the General Plan. As such, the proposed residential development would not result in an unexpected water demand from a surplus of residential units, unaccounted by the TPWD's UWMP. Water lines, would, however, need to be extended to and within the site to service the new residential units.

Sanitary Sewer System
The City of Twentynine Palms does not provide or operate a wastewater collection/treatment system, requiring all proposed development, including Alternative 2 to implement an on-site septic system for wastewater management. Each home under this Alternative would be expected to install on-site septic tanks, which would be regulated by the RWQCB, as would be the case for

Alternative 3 or the proposed Project. These regulations ensure that impacts associated with sanitary sewer infrastructure would remain less than significant.

Flood Control

There are standard stormwater management features all new development must include into the final site design, in accordance with the City development and building codes. Alternative 2 would incorporate these features including on-site retention and curb and gutter installation to manage flood hazards at a localized level and thereby reduce water flow to regional flood control features. Alternative 2 construction would be subject to the City's requirements for the protection of surface water quality, as would Alternative 3 and Project development. These standards and requirements assure that development impacts remain less than significant.

Electricity

Alternative 2 would generate an energy demand through lighting for residential uses. However, Alternative 2 would be required to comply with energy efficiency standards during operation, in addition to the solar system mandate for residential units per the California Code of Regulations, Title 24. Alternative 2 would not excessively consume energy and, in turn, would not require a new electricity substation to be built so as to service existing and future users, similar to the Project and Alternative 3. Impacts would remain less than significant.

Natural Gas

Natural gas is available in some parts of the City, but most residential development relies on propane delivered to on-site tanks. The proposed 119 residential units would likely rely on propane if needed, and may not require either natural gas or propane, given Building Code requirements for all-electric new construction.

Summary

Alternative 2 would require new utility infrastructure, given the site has not been previously developed nor are there any connections currently servicing the site. These connections would include water and electricity. In addition, new solid waste, septic, flood control, and telecommunication facilities would be implemented on-site. These utilities would be part of any residential development implemented under the General Plan, and would not result in excessive use. Although it would result in the extension of water and electric connections, these would not be provided at a greater extent than considered under the General Plan. For these reasons, Alternative 2 would have less than significant impacts on utility connections.

Alternative 3: Reduce Project Intensity

Alternative 3 would result in an 80± acre commercial solar facility on the northern half of the eastern parcel and 119 residential units on the balance of the site. The following analyzes the project's use of utilities and determines the degree of potential impact.

Domestic Water System

The solar facility would not generate a daily water demand, and any water use for panel cleaning would be trucked in, much like the proposed Project. Water demand is expected to be limited and about half of that required for the proposed Project (0.45 AFY), given the reduction in size by 50%. Therefore, the solar facility would not require the extension of water utility infrastructure.

The remaining acreage would be developed for residential use, which would generate the same number of units as were anticipated in the TPWD's UWMP for future water demand. Alternative 3 would generate a net demand increase of 0.2 AFY for the solar component of the Alternative, and no increase in water demand for the residential component of the Alternative. Under these conditions, Alternative 3 would not be a source of excessive water consumption and thus, potential impacts are less than significant, as they are for Alternative 2 and the Project.

Sanitary Sewer System

With the exception of the solar facility which proposes no on-site septic system, the residential development on the south and western portion of the Project site would require individual septic tanks to be installed to collect wastewater generated. These systems would be regulated by the RWQCB, and would not impact groundwater significantly, given the size of the lots. As is the case with Alternative 2 and the Project, impacts would be less than significant.

Flood Control

All new projects within Twentynine Palms, including Alternative 3, would be required to comply with applicable flood control standards pursuant to Chapter 19.62 (Flood Management Regulations) of the City Municipal Code. Under these conditions, Alternative 3 would manage on-site and off-site stormwater control and provide for on-site retention and water protection. As these standards apply to all development, Alternative 3 would have less than significant impacts on flood control facilities, as would Alternative 2 and the Project.

Electricity

The solar facility would generate renewable energy that could then be distributed and sold throughout SCE's energy grid. At no point during operation would the

solar facility require energy from SCE to power equipment. Conversely, the residential portion of Alternative 3 would require electricity from SCE which in accordance with energy efficiency and on-site energy requirements, would not generate excessive energy consumption. For these reasons, Alternative 3 would cause less than a significant impact to SCE energy supply and service to Twentynine Palms, and because of its energy generation, would have a lower impact than Alternative 2, but a greater but less than significant impact when compared to the Project.

Natural Gas

The small-scale solar facility would not require natural gas during construction nor operation. Natural gas is available in some parts of the City, but most residential development relies on propane delivered to on-site tanks. The proposed residential units would likely rely on propane if needed, and may not require either natural gas or propane, given Building Code requirements for all-electric new construction.

Summary

Alternative 3 would require utility connection to most services to service the residential units. The small-scale solar facility, in conjunction with the residential units, would result in net energy generation, and would have lower impacts than Alternative 2, but less benefit than the Project, which would generate twice the power.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.

Alternative 1: No Project/No Construction

Alternative 1 would not result in any development occurring within the Project site and thus, no water demand would be generated by the vacant parcel. Impacts to the region's water supply and TPWD's reliability for servicing existing and future consumers would not occur.

Alternative 2: No Project/Existing General Plan

Alternative 2 would develop the site in accordance with current land use designations (RL-5 and RS-E) which has been accounted by the TPWD's UWMP. The UWMP, in part, assumes City buildout consistent with the City General Plan land use. As such, the UWMP includes the property in the region's future water demand, which is less than supply during normal, dry, and multiple dry years. Alternative 2 would not reduce the local water supply beyond TPWD's ability to

serve, nor would it interfere with TPWD ability to provide water to current and future connections. Impacts would be less than significant.

Alternative 3: Reduce Project Intensity

As discussed above, Alternative 3 would generate similar water demand as compared to Alternative 2 or the proposed Project. Both developments would require water use for irrigation during construction, as required by MDAQMD dust control mandates under Rule 403.

Once operational, the solar facility would not generate a daily water demand given that the site will be unmanned, and no landscaping would be proposed. However, the facility would require the solar panels to be pressure washed periodically. The water demand would occur infrequently but would contribute to the site's annual water demand. Given the small-scale solar facility is a more than a 50% acreage reduction of that of the proposed Project, Alternative 3's solar facility would generate an annual water demand of 0.20 AF.

At buildout, the residential portion of Alternative 3 would result in 119 residential units, generating the same residential water demand as the Project or Alternative 2. The increase in water demand associated with Alternative 3 would be 0.20 AFY for the solar component of the Alternative As such, Alternative 3 would result in less than significant impacts, and marginally lower impacts than the proposed Project.

c) 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.

d) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Alternative 1: No Project/No Construction

No development would occur under Alternative 1 and thus, the Project site would not generate any solid waste. No conflict or violations of state or local standards or exceedance of landfill capacity would occur with Alternative 1. No impacts are anticipated.

Alternative 2: No Project/Existing General Plan
Alternative 3: Reduce Project Intensity

Development pursuant to Alternative 2 and Alternative 3 would generate solid waste during construction and operation. However, both alternatives would need to comply with state and local standards for waste reduction and diversion, including those established in Chapter 18.40 in the City Municipal Code. As such, solid waste generated by construction and operation would not excessively contribute to waste disposed at local landfills and, in turn, would not contribute to the accelerated use and potential exceedance of throughway capacity. Neither Alterative 2 or 3 would conflict with state or local standards for solid waste reduction goals or exceed capacity of local infrastructure. Therefore, no impact from solid waste production would occur with Alternative 2 and Alternative 3.

3.19.4 Mitigation Measures

With no mitigation measures, Alternative 1 would result in no impact and Alternative 2 and 3 would result in less than significant impacts. Therefore, no mitigation measures to reduce the environmental impact related to the use of utility services are required.

3.20. Conclusion and Overall Environmentally Superior Alternative

Each sub-section of this alternatives analysis has considered the potential impacts of each alternative and compared them to the proposed Project on a categorical basis. CEQA Guidelines Section 15126.6 (e)(2) states that if the environmentally superior alternative is the No Project Alternative, then an environmentally superior alternative must be identified from among the other alternatives. In this case, Alternative 1 is the environmentally superior alternative, as it would not result in any impacts and avoids the significant impacts that would result from the proposed Project. Because Alternative 1 is a "No Project" alternative, however, Section 15126.6 (e)(2) requires that an environmentally superior alternative be identified from among the other alternatives. While identification and disclosure of the environmentally superior alternative is required by CEQA, the City is not required to approve the environmentally superior alternative.

Based on the analysis below, the "environmentally superior" Project alternative is Alternative 3 (per CEQA 15126.6). Alternative 3, however, would not satisfy the Project's objectives to the degree that the proposed Project would, as described below. Specifically, Alternative 3 would:

1. Maintain the City's housing supply.
2. Expand the commercial generation of energy for the City and region, but to a lesser degree than the Project.
3. Provide the City with annual revenue from the solar facility, but to a lesser degree than the Project.
4. Reduce the City's carbon footprint, but to a lesser degree than the Project.
5. Result in less of a need for renaturalization of the site than the Project.

Neither of the "No Project" alternatives (Alternatives 1 and 2) would satisfy a majority of the Project objectives. Alternative 3, which would include a smaller solar project, meets the majority of Project objectives, but to a lesser degree than the Project. Alternative 3 does not fully mitigate the significant impacts associated with visual resources identified for the Project, but is the environmentally superior Alternative when balancing impacts and Project objectives.

Comparison of Alternatives

The following discussion summarizes the impacts of each alternative categorically and compares them to the proposed Project.

Aesthetics

Alternative 1 would not result in any impacts to scenic vistas, visual character and public views, nor would it generate new sources of light and glare. While this alternative would have no impacts, it also would not achieve any of the Project objectives, or implement any General Plan Goals or Policies.

Under Alternative 2, impacts to aesthetic resources would be less than significant and would be consistent with the current General Plan and intended development pattern for the City, although it would not achieve the Project's commercial renewable energy production objectives to provide additional energy available to the City and region.

Alternative 3 allows for both residential development and the construction of a smaller solar facility that would be sited on flatter terrain and require less disruption and less physical alteration to the landscape. However, the aesthetic impacts of the Alternative 3 solar facility would still result in significant and unavoidable impacts to the visual character of the Project site from Sunrise Road.

Air Quality

Alternative 1 would not result in any changes to the landscape and hence, there would be no impacts to air quality. While this alternative would have no impacts, it also would not achieve any of the City's General Plan residential goals or and Project objectives.

Alternative 2 would carry out housing growth per the current General Plan and result in less than significant impacts to air quality with the construction and operation of 119 single family homes. With the State's requirement that all new single family homes include solar installations, Alternative 2 would potentially result in renewable energy production for those individual homes, which could offset some of the additional demand for energy generated by the residential development.[1]

With regard to air quality, Alternative 3 and the proposed Project are have similar impacts. Impacts to air quality would be less than significant under either of these scenarios.

Biological Resources

As discussed throughout this Section, Alternative 1 would result in no physical development and therefore would have no impacts on biological resources,

[1] California Energy Commission, 2022 Energy Code, "Solar PV, Solar Ready, Battery, and Electric Ready," https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/energy-code-support-center/solar, accessed April 2025.

whereas Alternative 2 and 3 are both development alternatives and would physically impact biological resources through habitat modification and potential interference with existing wildlife corridors transversing the Project site.

Alternative 2 proposes less intensive development than the proposed Project, with similar biological impacts after applying Mitigation Measures BIO-1 through BIO-10, reducing all potentially significant impacts to less than significant levels. Alternative 2 presents the least intense development option by eliminating the commercial solar component.

Alternative 3 proposes a smaller commercial solar component and the same number of residential units, but remains consistent with the Project's objectives. Because Alternative 3 would result in a smaller solar development footprint compared to the proposed Project, and would therefore retain the most natural habitat, Alternative 3 is thus environmentally superior to the proposed Project with respect to biological resources.

Cultural Resources

Alternative 1 proposes no development of the site and thus no impacts to historical and archaeological resources would occur.

Alternative 2 proposes that only residential units consistent with the General Plan be constructed. Under Alternative 2, development on the Project site would be consistent with the current General Plan and the intended development pattern for the City. This Alternative would disturb the entire site, but ground disturbance would be reduced since home construction would require less grading.

Alternative 3 proposes a similar amount of residential development as compared to Alternative 2 and the proposed Project but proposes a smaller solar development footprint, which would require more grading than Alternative 2 but less grading than the Project.

Upon incorporation of the mitigation measures discussed in Section 2.6, impacts associated with the Project, Alternative 2, and Alternative 3 would be reduced to less than significant levels.

Energy

Alternative 1 does not propose any development and would not result in any changes to the landscape. As such, there would be no wasteful, inefficient, or unnecessary consumption of energy resources, and no environmental impact. While this alternative would have no impacts, it also would not achieve any of the City's General Plan goals and policies or Project objectives.

Alternative 2 would result in the consumption of 146,118 gallons of fuel, 905.545 MWh of electricity consumption and 3,723.476 MMBtu of natural gas per year during the operational phase. Alternatives 2 proposes an equivalent option in terms of energy use compared to the proposed Project; however, it does not result in any commercial energy production or meet the Project objective of generating electricity with renewable energy.

Alternative 3 would consume the same amount of fuel annually as Alternative 2 and the Project for the residential component. The solar facility in this Alternative is projected to generate 40,011.798 MWh the first year. Compared to the proposed Project, Alternative 3 provides commercial energy production and achieves the Project's commercial renewable energy production goals and the City's housing goals, but would not generate as much renewable energy as the Project. Both the Project and Alternative 3 would result in net energy generation to be utilized for the region, a benefit that would not be realized under Alternatives 1 and 2.

Geology and Soils

The Project site is not located in an area with a high susceptibility for geological hazards. Alternative 1 proposes that the Project site remains undeveloped and thus no geological impacts would affect the site.

Alternative 2 and Alternative 3 would develop the site in accordance with the building and development standards set by the California Building Code, City General Plan, and Municipal Code and thus reduce the property's susceptibility to hazards. These impacts are considered comparable, and none of the alternatives would substantially reduce or avoid any impacts relating to geological hazards compared to the proposed Project. Both Alternative 3 and the Project result in less than significant, and equivalent, geologic and soils impacts.

Greenhouse Gas Emissions

Alternative 1 does not propose any development and would not result in any changes to the landscape. As such, there would be no GHG emissions and thus no associated impacts to the environment.

Alternative 2 proposes the residential build out on the Project site in accordance with the City's General Plan. Emissions of GHGs would be less than the applicable threshold and would not interfere with the City's achievement of emissions reduction targets. With the Building Code's requirement for photovoltaic solar installation.

With respect to GHG emissions, the Proposed Project would be the environmentally superior option because the Project would prevent 12,861.67 $MTCO_2e$ from entering the atmosphere during the first year of operation, which surpasses the annual emissions savings of Alternative 3.

Hazardous Materials

Although Alternative 1 would result in no impact from hazards and hazardous materials, it does not fulfill any of the Project's objectives.

Alternative 2 would include 119 residential units, which would use a limited level of hazardous household products, and no risk of a release of hazardous materials associated with operation of the solar facility, but it would not meet the Project objectives. Alternative 3 would include a solar facility with a transformer, and PV solar panels. In comparison, Alternative 3 would result in a greater potential for a release of hazardous materials than Alternative 2, and a lower level than the proposed Project. These impacts, however, are less than significant for the proposed Project and Alternatives 2 and 3.

Hydrology and Water Resources

Alternative 1 would not result in the net increase of impermeable surfaces, water demand, or stormwater runoff, and there will be no changes in hydrologic conditions on site or in the vicinity.

Alternatives 2 and 3 would result in a less intense development scenario compared to the proposed Project. However, all "build" alternatives would be subject to the same regulatory requirements designed to reduce impacts to surface waters and protect water quality, and the solar portion of Alternative 3 would be subject to the same mitigation measure required for the solar portion of the proposed Project.

Alternative 2 would result in the lowest net water demand increase compared to the proposed Project and Alternative 3, since it would not require limited water use for a solar facility. However, the Project, Alternative 2, or Alternative 3 would not substantially decrease groundwater supplies.

Overall, impacts related to hydrology and water quality resulting from both the Project and Alternatives 2 and 3 are expected to be less than significant.

Land Use

Alternatives 1 and 2 would not significantly impact the environment or result in inconsistencies with the General Plan or zoning standards. Alternative 3 would meet the City's General Plan goals and policies.

Noise

Alternative 1 would leave the site in its currently natural state and would not result in sources of noise or groundborne vibration.

Of the "build" alternatives, Alternative 2 proposes the least intense development and thus less impact to both construction and operational noise levels. However, all "build" alternatives, including the proposed Project, would result in less than significant long-term noise impacts with adherence to City standards. Because of the reduced grading necessary for a large lot subdivision under Alternative 2, construction noise and vibration would likely be reduced when compared to Alternative 3 and the proposed Project.

Population & Housing

Alternative 1 would not increase population or the number of housing units within the City. While this alternative would have no impacts, it also would not achieve any of the Project objectives or the General Plan's goals.

Alternatives 2 and 3 would have the site develop under existing General Plan land use designations, which by definition is considered planned population and housing growth and therefore would have no adverse impacts. Local population growth has occurred significantly more slowly than projected in the General Plan, and the population growth associated with Alternative 2, Alternative 3 and the proposed Project are within the City's anticipated growth trends.

Overall, impacts related to population and housing resulting from both the Project and Alternatives 2 and 3 are expected to be less than significant. Alternative 3 and the Project have similar limited impacts.

Public Services

Alternative 1 does not propose any development and would not result in any increases to the City's population size or demand for public services.

Alternatives 2 and 3 and the proposed Project would result in an overall total of 119 single family homes on the proposed Project site and an approximate increase of 294 residents. Alternatives 2 and 3 and the proposed Project carry out residential growth approved by the City's General Plan and are consistent with the residential growth, and associated demand for public services, contemplated for build out.

Recreation

Alternative 1 would not increase demand on existing parks, recreation facilities, or trails, nor would it provide any such facilities. While this alternative would have no impacts, it also would not achieve any of the Project objectives.

As with the proposed Project, Alternatives 2 and 3 would also contribute funding for future City parks and facility improvements or expansions and would overall have less than significant impacts related to recreational resources. These impacts are considered comparable, and none of the alternatives would substantially reduce or avoid any impacts relating to parks and recreational facilities compared to the proposed Project.

Transportation

Alternative 1 would result in no traffic impacts, but would not implement any Project objectives. On the basis of trip generation and VMTs, Alternatives 2 and 3 are anticipated to result in some additional traffic associated with construction and build-out of the residential units, but these impacts are anticipated in General Plan build out, and will remain less than significant.

Tribal Resources

Alternative 1 proposes no development of the Project site and thus no impacts to historical and archaeological impacts would occur. While this is the optimal environmental condition, it does not meet any of the objectives of the Project or the City's General Plan.

Alternative 2 proposes that only the residential units allowed under the General Plan be constructed. As is the case for the Project and Alternative 3, a separate Cultural Report for the portion of the site south of Samarkand Drive would be required when development was proposed to confirm whether historical and archaeological resources would be significantly impacted. Under Alternative 2, it would be expected that grading would be somewhat less than Alternative 3, insofar as residential development would not require mass grading for the solar facility. However, grading would still be needed to create lots and roadways, and there would be potential for disturbance of buried tribal resources.

Under Alternative 3, grading would be reduced, compared to the proposed Project, because of the reduction in solar facility footprint. As with the proposed Project, however, Alternative 3 would result in less than significant tribal resource impacts with the imposition of the same mitigation measures.

Utilities

Alternative 1 would result in no impact. In considering the potential for future development, Alternative 2 would be superior because it would result in the least adverse effects to the environment from utility extensions. As a result, this Alternative would not generate any service demands unplanned by local utilities. Alternative 3 and the proposed Project would both result in less than significant impacts to utilities, however, Alternative 3 would have less utility impacts as compared to the proposed Project.

CITY OF TWENTYNINE PALMS SOLAR PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT

4. UNAVOIDABLE SIGNIFICANT IMPACTS

Introduction

Unavoidable significant impacts are those that cannot be reduced to acceptable or insignificant levels by the implementation mitigation measures. Impacts associated with buildout of the proposed Project are addressed in detail in Section 2 of this EIR. Comprehensive mitigation measures have been developed to address potential impacts. In most cases, the mitigation measures set forth in this EIR will demonstrably and effectively reduce all potentially significant impacts to levels of insignificance. However, aesthetic impacts associated with visual character could not be mitigated to less than significant levels and are considered unavoidable significant impacts.

Aesthetics: Visual Character

The Solar Project occurs in a non-urbanized area, and is surrounded by vacant desert lands. The visual character of the Solar Project has been evaluated on this basis. A key characteristic of the Project site is the natural topography created by sheet flow and the drainage system that starts south of Two Mile Road and fans out across the middle of the Project site. The natural state of the Project site and surrounding landscape have remained largely intact in this region of Twentynine Palms due to the distance from State Highway 62 and the few paved roads around the Project site. Apart from the electric transmission lines along Two Mile Road and Sunrise Road and Carodean Substation located approximately 0.5 miles west of the Solar Project along Two Mile Road, the Project site and the surrounding landscape to the west present a high level of native high-desert visual unity.

The Solar Project construction phase would involve grading 140 acres to remove vegetation and even out the terrain. A steel bridge would be constructed over the central ephemeral streams. Steel piles driven 7.5 feet into the ground would support racks holding 160,000 solar modules. The modules would stand between six and seven feet high. Security chain link fencing would surround the Solar Project. 10-foot wide unpaved service roads separate the rows of arrays, and 20-foot wide fire access roads are distributed throughout the Solar Project site. Additionally, the pad-mounted transformer would be placed at the south-central edge of the Solar Project.

The solid expanse of dark, uniformly placed solar arrays placed atop graded and compacted soil would starkly contrast with the surrounding landscape of natural contours, light beiges, tans, browns and greens. The Solar Project would not be consistent with any other land uses currently allowed under the General Plan, or with the prevailing visual character in the surrounding vicinity due to its mass, scale, shape, and color. Views of the expansive desert from surrounding public vantage points, particularly from the east side of the site along Noels Knoll and Sunrise Road, and also along Amboy Road and the planned multi-purpose trail would be impacted by the Solar Project because of the large scale and highly contrasting color and form. From the northern property boundary looking southerly, users of both Amboy Road and the planned multi-purpose trail would experience a significant change in the native desert, with homes located on lots of 5 acres or more, to the proposed intensity of solar panels occurring in a solid pattern across more than 100 acres of land. The Solar Project would substantially change the visual character along both Amboy Road and the planned multi-purpose trail. Because the Solar Project proposes a broad expanse of development, there are no mitigation measures available to reduce these impacts. As a result, impacts to the visual character of the area as seen from the northwest, north and northeast will remain significant and unavoidable.

From Noels Knoll, immediately adjacent to the Solar Project; and from Sunrise Road, 1,400 feet east of the Solar Project, and from Samarkand Drive (once extended) along the south boundary of the Project, the Solar Project would be in full view and would substantially degrade the existing visual character or quality of public views of the site and its surroundings. A chain link fence along the perimeter would also impede westerly views and degrade the visual character of the landscape. Impacts to views from Noels Knoll, Sunrise Road and Samarkand Drive would be significant and unavoidable.

In order to reduce the severity of these impacts, mitigation measures AES-1 and AES-2 are included in Section 2, which would allow for the restoration of the native plant environment surrounding the solar panels to the extent possible. However,

given the broad expanse of land whose scenic character will be impacted, and its location surrounding the panels, and that the Solar Project would still be visible after replanting of native vegetation, impacts would remain significant and unavoidable due to the mass, scale, and form of the Solar Project.

Cumulative Impacts

While the Project does not propose to change the land use designation for any site other than the Project site, the City's creation of a new Energy zone could conceivably increase the potential for similar future solar projects within Twentynine Palms, insofar as other projects could request re-zoning to this new use. It is possible that some of those projects could be located in undeveloped rural areas of the City. Any such proposals would require a discretionary zone change and would need to meet the standards provided within the City's proposed Energy zone. The impacts associated with any additional requests for the use of the Energy designation and zone would be assessed on a case-by-case basis as each of these projects was proposed. However, depending on the location of future projects, if any, their impacts to visual character could be significant and unavoidable, and when added to the impacts of the Solar Project, could be cumulatively significant.

CITY OF TWENTYNINE PALMS SOLAR PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT

5. IRREVERSIBLE COMMITMENT OF RESOURCES

As required by CEQA Section 15126.2(c), this section of the EIR addresses the potentially significant irreversible environmental changes to or loss of non-renewable resources that could occur from implementation of the proposed Project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified. (also see Public Resources Code section 21100.1 and Title 14, California Code of Regulations, Section 15127). In general, non-renewable resources imply fossil-based energy resources, but may also pertain to the permanent loss of agricultural, biological, mineral and other natural resources. The use of non-renewable resources during construction and operation of future projects allowed by the proposed Project, and long-term impacts associated with the build out of the Project area may be irreversible and irretrievable.

Buildout of the proposed Project will result in the irretrievable and irreversible commitment of non-renewable natural resources, including energy resources such as petroleum, and mineral resources used for construction materials, such as concrete and steel. Future development facilitated by the proposed Project would increase the demand for sand and gravel resources for roadways, infrastructure, and building construction. These resources could be derived from the regional market, but the demand for sand and gravel resources would not be considered significant when compared to available regional resources.

The annual demand for electricity (in kWh), from the residential units within the Project site would be significantly reduced by the Solar Project's generation of electricity. Future residential development facilitated by the proposed Residential GPA will not increase General Plan build out housing units, and would be evaluated on a project-by-project basis to assure each project is designed, built, and operated in accordance with all applicable energy-related regulations, including energy efficiency and conservation standards. Energy related impacts are considered less than significant because the proposed Solar Project will result in significant new solar energy production.

The proposed Project would facilitate continued urban development that could disturb or permanently affect sensitive species and/or their habitats. As discussed in Section 2.5, a number of mitigation measures are proposed to offset the impacts of the Solar Project on biological resources at the site caused by grading the 140± acres, and the revegetation of portions of the site after construction will allow for the re-colonization of native species to some extent. Mitigation measures have been found in Section 2.5 to reduce the Project's impacts on biological resources to less than significant levels.

In summary, although the proposed Project will result in the irreversible loss of finite resources, the loss will not be significant, and is consistent with planned development goals of the City and the objectives of the proposed Project.

CITY OF TWENTYNINE PALMS SOLAR PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT

6. GROWTH INDUCING IMPACTS

Section 15126.2 of the CEQA Guidelines requires that an EIR consider and analyze a project's potential to induce growth. Growth inducement can be directly generated by a project, such as the extension of a roadway into a previously undeveloped area, or may indirectly impact growth and cause changes in the environment that could lead to growth. The degree to which the proposed Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment is evaluated below. This section is based on the project description provided in Section 1 of this EIR, and the analysis of the various impact areas conducted in Section 2. As noted in CEQA (15126.2(e), it should not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

The proposed Project will not overtly, incidentally or significantly induce growth or change the physical conditions in this area of the City, or in the City as a whole. The Residential GPA results in the same number of residential units at General Plan build out as would occur under current General Plan designations, since it simply relocates the units lost on the Solar Project site to lands adjacent and to the south within the Project site. The Solar Project will increase the availability of electric power within Southern California Edison's (SCE) service area, but will not, in and of itself induce growth, since SCE's service area is projected to grow regardless of the availability of power, according to the City's

General Plan, SCAG, SanBAG and other agencies charged with predicting growth in the region. Therefore, growth that is facilitated by the proposed Project is not of a type or extent that is inadvertently induced in the sense meant by CEQA. Growth in the City will be highly coordinated both locally and regionally, and the City and its public service providers will continue to coordinate land use and transportation, as well as public services and utilities.

Cumulative Impacts

Impacts associated with the implementation of the Project must be considered along with the effects of other development, which may also occur outside the proposed Project and jurisdiction. CEQA identifies these as cumulative impacts (Section 21083 (b), CEQA Statutes and Section 15355 of the CEQA Guidelines). In this EIR, cumulative impacts have been addressed categorically for the proposed Project in Section 2.0 and for project alternatives in Section 3.0. As found in those Sections, cumulative impacts associated with implementation of the Project are expected to be less than significant.

CITY OF TWENTYNINE PALMS SOLAR FIELD

DRAFT ENVIRONMENTAL IMPACT REPORT

7. ORGANIZATIONS, PERSONS AND DOCUMENTS CONSULTED

A. City of Twentynine Palms
6136 Adobe Road
Twentynine Palms, CA 92277

B. Project Proponent
E-Group PS, LLC
40764 Winchester Road, Suite 590
Temecula, CA 92591

C. Environmental/Planning Consultant
Terra Nova Planning & Research, Inc.
Attn: Nicole Sauviat Criste
42635 Melanie Place, Suite 101
Palm Desert, CA 92211

D. Air Quality Consultant
Terra Nova Planning & Research, Inc.
42635 Melanie Place, Suite 101
Palm Desert, CA 92211

E. Biological Consultant

DUDEK
78-075 Main Street, Suite G
La Quinta, CA 92253

2280 Historic Decatur Road, Suite 200
San Diego, CA 92106

F. Cultural Consultant

DUDEK
605 Third Street
Encinitas, CA 92024

G. Geotechnical Engineering Consultant

NTS Geotechnical
5319 University Drive
Irvine, CA 92612

H. Glare Analysis Consultant

DUDEK
38 North Marengo Avenue
Pasadena, CA 91101

I. Hydrology Consultant

DUDEK
605 Third Street
Encinitas, CA 92024

CAL-Storm Compliance, Inc.
28562 Oso Parkway, D-508
Rancho Santa Margarita, CA 92688

J. Phase I Environmental Site Assessment Consultant

Phase I
RSB Environmental
6001 Savoy Drive, Site 110
Houston. TX 77036

K. Utilities, Other Agencies & Service Providers

Burrtec Waste Industries, Inc.
County of San Bernardino Flood Control District
Mojave Desert Air Quality Management District
Morongo Unified School District

San Bernardino County Flood Control District
Southern California Association of Governments
Southern California Edison
Southern California Gas Company
Spectrum
Twentynine Palms Water District
Verizon

L. Documents

- 2010 Twentynine Palms General Plan Environmental Impact Report, August 2010.
- 2020 Urban Water Management Plan for Twentynine Palms Water District, prepared by Kennedy Jenks, June 2021.
- 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Final Growth Forecast by Jurisdiction.
- 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Final Growth Forecast by Jurisdiction.
- 2025 Desert Tortoise Survey Letter Report for the E-Group PS Solar Project, prepared by Dudek, May 2025
- Airport Comprehensive Land Use Plan for Twentynine Palms Airport prepared by San Bernardino County Planning Department, May 1992.
- Aquatic Resources Delineation Report for the E-Group PS Solar Project, prepared by Dudek, January 2025.
- Biological Resources Technical Report for the E-Group PS Solar Project, prepared by Dudek, April 2025.
- Burrowing Owl Relocation Plan for the E-Group PS Solar Project, prepared by Dudek, January 2025.
- California Aviation System Plan, adopted by California Transportation Commission, August 2021.
- California Health and Safety § 38505 (g).
- California's Fourth Climate Change Assessment, 2018, Inland Deserts Region Report, California Energy Commission, accessed October 2025.
- City of Twentynine Palms Community Trail Master Plan, July 2014.
- City of Twentynine Palms General Plan Environmental Impact Report, August 2010.
- City of Twentynine Palms General Plan, 2012.

- City-wide traffic safety report, 2019 traffic counts, City Engineer's office, City of Twentynine Palms.
- City/County Population and Housing Estimates, California Department of Finance, January 1, 2024.
- Cultural Resources Inventory and Evaluation Report for the E-Group PS Solar Project, prepared by Dudek, January 2025.
- E-Group PS Solar Project Hazardous Materials Technical Memorandum, Dudek, February 2024.
- Environmental Protection Agency, Mandatory Reporting of Greenhouse Gases, Federal Register, Vol. 74, No. 209 Part II, October 30, 2009.
- Federal 70ppb Ozone Attainment Plan (Western Mojave Desert Nonattainment Area, Adopted January 23, 2023, MDAQMD, accessed February 2025.
- FEMA Glossary for Zone C or X, Federal Emergency Management Agency (FEMA), updated April 2023.
- Glare Analysis Report for the E-Group PS Solar Project, prepared by Dudek, January 2025.
- Habitat Restoration Plan for the E-Group PS Solar Project, prepared by Dudek, January 2025.
- Hydrology and Hydraulic Technical Study for E-Group PS Solar Project, prepared by Dudek, January 2025.
- IPCC Special Report: Global Warming of 1.5°C – Summary for Policymakers, 2018, accessed October 2025.
- Morongo Basin Conservation Priorities Report, prepared by Sonoran Institute, 2012.
- Noise as a Public Health Hazard, prepared by American Public Health Association, October 2021.
- Notice of Preparation and Initial Study for E-Group PS Solar Project, 2024.
- Preliminary Drainage Report for E-Group PS Solar Project, prepared by Dudek, January 2025.
- San Bernardino County Greenhouse Gas Reduction Plan Update, City of Twentynine Palms Reduction Profile, June 2021, accessed October 2025.
- San Bernardino County Greenhouse Gas Reduction Plan Update, June 2021, accessed October 2025.

- Southern California Gas Company Pipeline Basics, prepared by Southern California Gas Company, December 2013.
- Temporary Worker Initiative: Noise Exposure and Hearing Conservation, Occupational Safety and Health Administration, accessed February 2025.
- Total Generation by Type and County 2022, California Energy Commission, August 10, 2023.
- Transportation and Construction Vibration Guidance Manual, prepared by California Department of Transportation, April 2020.
- Transportation Impact Study Guidelines, San Bernardino County, July 2019.
- Twentynine Palms Water District 2020 Urban Water Management Plan, Kennedy Jenks, June 2021.
- Water Consumption in PV Panel Cleaning Study, prepared by American Polywater, accessed January 2025.

M. Websites

- 2020 Decennial Census, Table P1, US Census Bureau, https://data.census.gov/table/DECENNIALPL2020.P1?g=160XX00US0680994, accessed March 2025.
- 2021 Total System Electric Generation. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation. California Energy Commission. (2022).
- 2022 Scoping Plan for Achieving Carbon Neutrality, California Air Resources Board, December 2022, https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents, accessed February 2025.
- About Us, Southern California Edison, https://www.sce.com/about-us/who-we-are/leadership/our-service-territory, accessed March 2024.
- American Community Survey 5-Year Estimates, Table DP02, US Census Bureau, https://data.census.gov/table/ACSDP5Y2023.DP02?g=160XX00US0680994, accessed March 2025.
- California Department of Transportation, State Route 62 Embankment Restoration Project, https://dot.ca.gov/caltrans-near-me/district-8/, accessed March 2024.
- California Environmental Quality Act (CEQA) and Federal Conformity Guidelines, MDAQMD, February 2020, https://www.mdaqmd.ca.gov/home/showpublisheddocument/8510/638591628485530000, accessed October 2025.

- California Natural Gas Total Consumption, U.S, Energy Information Administration. Accessed October 2025: https://www.eia.gov/dnav/ng/hist/na1490_sca_2a.htm.
- California Net Electricity Generation by Source June 2025, US Energy Information Administration, https://www.eia.gov/state/?sid=CA#tabs-2, accessed October 2025.
- California State Profile and Energy Estimates, US Energy Information Administration, https://www.eia.gov/state/analysis.php?sid=CA, accessed February 2025.
- Capacity Factors and Usage Factor at Electric Generators: Total (all sectors), 2023, US Energy Information Administration, https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_cf.html&sid=CA, accessed October 2025.
- CARB Greenhouse Gas Inventory for 2000-2022, 2024 Edition, https://ww2.arb.ca.gov/ghg-inventory-data, accessed October 2025.
- Categories of Hazardous Waste Generators, US Environmental Protection Agency, https://www.epa.gov/hwgenerators/categories-hazardous-waste-generators, accessed February 2025.
- City of Twentynine Palms General Plan, 2012. https://www.ci.twentynine-palms.ca.us/general-plan
- Comparative Examples of Noise Levels, IAC Acoustics, https://www.iacacoustics.com/blog-full/comparative-examples-of-noise-levels, accessed February 2025.
- County of San Bernardino Flood Control District, Map showing San Bernardino Flood Control Facilities,https://www.arcgis.com/apps/mapviewer/index.html?webmap=6ed1bcba6d7c4e14b76cf07593c9875c, updated January 2024.
- County of San Bernardino, Land Use Services/Planning Division Renewable Energy Projects as of February 1, 2025. https://lus.sbcounty.gov/wp-content/uploads/sites/48/SolarProjectListFEB2025.pdf
- Defining Hazardous Waste, California Department of Toxic Substances Control, https://dtsc.ca.gov/defining-hazardous-waste/, accessed March 2024.

- EMFAC2025 v2.0.0, accessed October 2025. Scenario Analysis, San Bernardino County, 2024. https://arb.ca.gov/emfac/scenario-analysis/generate-template.

- End-of-Life Solar Panels: Regulations and Management, US Environmental Protection Agency, https://www.epa.gov/hw/end-life-solar-panels-regulations-and-management, accessed March 2024.

- Facts About Our Water, Twentynine Palms Water District, https://29palmswater.com/facts-about-your-water/, accessed March 2024.

- Fault Activity Map of California, California Department of Conservation, https://maps.conservation.ca.gov/cgs/fam/, accessed March 2024.

- Federal 8-hour Ozone Attainment Plan, Western Mojave Desert Non-attainment Area, Adopted June 2008, MDAQMD, accessed October 2025.

- Guide To Peak Sun Hours. Kielar, H. (2023, March 30), GreenLancer. https://www.greenlancer.com/post/peak-sun-hours

- How Extreme Weather and System Aging Affect the US Photovoltaic Fleet, National Renewable Energy Laboratory, January 24, 2024, https://www.nrel.gov/news/program/2024/how-extreme-weather-and-system-aging-affect-the-us-photovoltaic-fleet.html#:~:text=In%202022%2C%20in%20their%20first,End%20of%20interactive%20chart, accessed October 2025.

- Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans, SCAQMD, December 2008, https://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf, accessed October 2024.

- IPCC Climate Change 2021: The Physical Science Basis. Contribution of Working Group 1 to the Sixth Assessment Report of the IPCC, 2021, https://www.ipcc.ch/report/ar6/wg1/, accessed October 2025.

- Jurisdictional Diversion/Disposal Rate Detail for Twentynine Palms in 2023, California Department of Resources Recycling and Recovery Database, https://www2.calrecycle.ca.gov/LGCentral/%20DiversionProgram/JurisdictionDiversionDetail/547/Year/2023, accessed January 2025.

- Lateral Spread, U.S. Geological Survey, https://www.usgs.gov/media/images/lateral-spread, accessed November 2024.
- Map showing Areas of Land Subsidence in California, U.S. Geological Survey, https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html, accessed November 2024.
- MDAQMD, Pollution Sources, https://www.mdaqmd.ca.gov/air-quality/pollution-sources, accessed October 2025.
- Mesquite Lake Fault, U.S. Geologic Survey Quaternary Fault and Fold Database, https://earthquake.usgs.gov/cfusion/qfault/show_report_AB, accessed March 2024.
- Native American Heritage Month, City of Riverside, November 6, 2023, https://www.riversideca.gov/press/native-american-heritage-month, accessed April 2024.
- Native Wildlife, Morongo Basin Conservation Agency, https://www.mbconservation.org/native_wildlife, accessed March 2024.
- Noise Barrier Inventory, University of Florida GeoPlan Center, https://www.geoplan.ufl.edu/noise-barrier-inventory/, July 2023.
- Noise Propagation, Clement Acoustics, https://clementacoustics.co.uk/noise-propagation/, accessed February 2025.
- Pinto Mountain Fault Zone, U.S. Geologic Survey Quaternary Fault and Fold Database, https://earthquake.usgs.gov/cfusion/qfault/show_report, accessed March 2024.
- Pollution Sources, MDAQMD, https://www.mdaqmd.ca.gov/air-quality/pollution-sources, accessed January 2025.
- Preliminary Drainage Study for E-Group PS Solar Project, Dudek, January 2025.
- PVWatts Calculator, https://pvwatts.nrel.gov/.
- QuickFacts: Twentynine Palms city, California. (2024). Census Bureau QuickFacts; United States Census Bureau. https://www.census.gov/quickfacts/fact/table/twentyninepalmscitycalifornia/HSD410223#HSD410223.

- QuickFacts: Twentynine Palms city, California. (2024). Census Bureau QuickFacts; United States Census Bureau https://www.census.gov/quickfacts/fact/table/twentyninepalmscitycalifornia/HSD410223#HSD410223

- San Andreas Fault, Britannica, https://www.britannica.com/place/San-Andreas-Fault, accessed 2024.

- Solar Integration: Inverters and Grid Services Basics, prepared by U.S. Department of Energy, https://www.energy.gov/eere/solar/solar-integration-inverters-and-grid-services-basics, accessed February 2025.

- Solar Inverter Noise Levels: A Comprehensive Analysis, Solar Ctrl, https://www.solarctrl.com/blog/solar-inverter-noise-levels/, February 2024.

- Sound Attenuation Calculator—Noise Line Source, WKC, https://www.wkcgroup.com/sound-attenuation-calculator-line-source/, accessed February 2025.

- Sources of Air Pollution, California Air Resources Board, https://ww2.arb.ca.gov/resources/sources-air-pollution, accessed October 2025.

- Southern California Gas Company Profile, Southern California Gas Company, https://www.socalgas.com/about-us, access January 2025.

- Summary Statistics for Natural Gas – California, 2019-2023. Accessed October 2025: https://www.eia.gov/naturalgas/annual/pdf/table_S05.pdf

- The Cahuilla People, Augustine Band of Cahuilla Indians, 2018, https://augustinetribe-nsn.gov/cahuilla-people/#:~:text=The%20Cahuilla%20can%20be%20generally,and%20practiced%20the%20same%20traditions, accessed March 2024

- The Threatened Desert Tortoise, Bureau of Land Management, https://www.blm.gov/sites/blm.gov/files/documents.pdf

- Tribal Government, Twenty-Nine Palms Band of Mission Indians, https://www.29palmstribe.org, accessed April 2024

- U.S. Department of Energy Average Fuel Economy by Major Vehicle Category for "Delivery Trucks". https://afdc.energy.gov/data/10310, accessed October 2025.

- United Nations Climate Change, UNFCCC Process, The Paris Agreement https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement, accessed October 2024.
- United Nations Framework Convention on Climate Change, Article 1 Definitions (2), https://unfccc.int/resource/ccsites/zimbab/conven/text/art01.htm, accessed October 2024.
- United States Environmental Protection Agency, EPA's Endangerment Finding, https://www.epa.gov/sites/default/files/2016-08/documents/endangermentfinding_faqs.pdf, accessed October 2024.
- US Department of Agriculture Soil Survey Database, https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed March 2024.
- Water Consumption in PV Panel Cleaning, American Polywater, accessed January 2025. https://www.polywater.com/wp-content/uploads/2021/08/SPW-Intl-blog-Water-Use-IndiaCA.pdf
- Western Mojave Desert Air Quality Plans prepared by California Air Resources Board, https://ww2.arb.ca.gov/our-work/programs/california-state-implementation-plans/nonattainment-area-plans/western-mojave, accessed October 2025.
- White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution, South Coast Air Quality Management District, http://www.aqmd.gov/docs/default-source/Agendas/Environmental-Justice/cumulative-impacts-working-group/cumulative-impacts-white-paper.pdf).
- Who We Serve, Twentynine Palms Water District, https://29palmswater.com/who-we-serve/, accessed March 2024.
- Yes, Solar Farms Can Produce Noise!, Acentech, https://www.acentech.com/resources/yes-solar-farms-can-produce-noise/, June 2020.

N. Correspondence

- Personal communication, Ms. Abigail Hernandez Conde, CPA, Finance Director, City of Twentynine Palms, February, 2025.