3.1.7 Mineral Resources

This section of the Environmental Impact Report (EIR) analyzes potential impacts to mineral resources resulting from the implementation of the Starlight Solar project (project). The analysis is based on review of existing resources, technical data, and applicable laws, regulations, and guidelines, as well as the following technical report which was prepared for the project in accordance with *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements – Mineral Resources* (County of San Diego 2008):

- *Mineral Resource Technical Study, Proposed Starlight Solar Project, San Diego County, California* (Leighton Consulting, Inc.) (Appendix N of this EIR)

No comments regarding mineral resources were received in response to the Notice of Preparation (NOP). Copies of the NOP and comment letters received in response to the NOP are included in Appendix A, NOP, Initial Study, and Public Comments, of this EIR.

3.1.7.1 Existing Conditions

Topographical Setting

The project site is located within the U.S. Geological Survey (USGS) 7.5-minute Live Oak Springs quadrangle, generally between Interstate 8 (I-8) and the U.S.–Mexico border and near Jewell Valley and Manzanita, California. Topography on the 588-acre site ranges from gently sloping valley floor to moderately steep existing natural slopes approaching 1:1 (horizontal to vertical) slope inclinations at various areas of the project site. The project site encompasses two topographically high areas, one north and one south, that are transected by a southeast-flowing broad drainage that includes Boundary Creek. Within the project area, the existing elevations range from a high of approximately 3,700 feet above mean sea level (amsl) in the north and 3,650 feet to the south, to a low of approximately 3,450 feet within the drainage of Boundary Creek. The surrounding hills around the project site peak between elevations of 3,600 and 4,000 feet amsl.

Geology

The project site is located in the lower Peninsular Range Region of San Diego County, a subset of the greater Peninsular Ranges geomorphic province of California. The Peninsular Ranges geomorphic province is approximately bounded to the east by Elsinore Fault Zone, to the north by the Transverse Ranges, to the south by Baja California, and to the west by the Pacific Ocean. The project site is underlain by Cretaceous plutonic rocks. The plutonic rocks are non-conformably overlain by a relatively thin sequence of generally unconsolidated Holocene colluvium consisting of silty and clayey sand with scattered gravels. Surficial units on-site include undocumented artificial fill (unmapped), topsoil/colluvium (Qc), and bedrock units (Klp). The sole bedrock unit on-site is Tonalite of La Posta (Klp). Additional detailed information regarding the surficial and bedrock units can be found in Appendix N.

Land Use

The *San Diego County General Plan: A Plan for Growth, Conservation, and Sustainability* (General Plan) (County of San Diego 2011a) designates a majority of the project site (16 of the 18 parcels) as Rural Lands with an 80-acre minimum size (RL-80). The generation-tie line route and San Diego Gas and Electric (SDG&E) Boulevard East Substation are designated as Semi-Rural Residential (SR-10), and the County Zoning Ordinance (County of San Diego 2025) identifies the site as General Rural (S-92) (County of San Diego 2023). Land to the north of the site, between the project and I-8, is designated as Rural Lands with

20-acre and 40-acre minimum size (RL-20 and RL-40), as well as RL-80. The surrounding areas can be characterized as a predominantly rural landscape featuring large-lot ranches and single-family homes with a mixture of small-scale agriculture, recreational opportunities, and vast areas of undeveloped lands.

Open Space Easement Areas

As shown in Figure 1-6 (Chapter 1.0, Project Description, Location, and Environmental Setting), the project contains 15 cultural open space easement areas designed to protect sensitive cultural resources within the Major Use Permit (MUP) project site, totaling 24.4 acres. No development or disturbance would occur within the open space easement areas. These areas would be fenced with a 6-foot-high chain-link perimeter fence with an additional foot of three strands of barbed wire along the top. Each open space easement area would include a gated entrance. Phase 1 would include four open space easement areas totaling 7.08 acres. Phase 2 would include 11 open space easement areas totaling 17.32 acres.

As shown in Figure 3.1.7-1, an off-site biological open space easement would be granted over 448 acres of sensitive vegetation communities, special-status plant species, and habitat for special-status species to protect sensitive biological resources (Appendix D.1, Biological Resources Report). This easement would be for the protection of biological resources and prohibits all of the following on any portion of the land subject to said easement: grading; excavation; placement of soil, sand, rock, gravel, or other material; clearing of vegetation; construction, erection, or placement of any building or structure; vehicular activities; trash dumping; or use for any purpose other than as open space.

Mineral Resource Potential

As mandated by the Surface Mining and Reclamation Act of 1975 (SMARA), the California State Mining and Geology Board classifies California mineral resources with the Mineral Resource Zones (MRZs) system. These zones have been established based on the presence or absence of significant sand and gravel deposits and crushed rock source area, e.g., products used in the production of cement. The classification system emphasizes Portland cement concrete aggregate, which is subject to a series of specifications to ensure the manufacture of strong durable concrete.

The following guidelines are presented in the mineral land classification for the region (Kohler and Miller 1982; Miller 1996).

- **MRZ-1** - Areas where adequate geologic information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- **MRZ-2** - Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that there is a high likelihood for their presence.
- **MRZ-3** - Areas containing mineral deposits, the significance of which cannot be evaluated from available data.
- **MRZ-4** - Areas where available information is inadequate for assignment to any other MRZ zone.

The project site is within southeastern San Diego County which has no mapped MRZs (see Appendix N). Specifically, it should be noted that the project site does not contain MRZ-2 zones within or adjacent to the boundaries; the closest MRZ-2 zone is located to the northwest roughly 50 miles away. The project site also does not contain MRZ-3 zones.

The project site is a different geologic province than is typical of MRZ-2 zones. It is predominantly colluvium and granitic rock site, with fine-grained silty sand deposits overlying the granitic rock. The project site is not located in an area near existing aggregate production areas. The nearest production areas

within San Diego County are at least 35 miles away. Closer production areas located in Imperial County are at least 20 miles away.

Documented historical mineral resource deposits have been identified directly east of the project site (see Appendix N). The quarry deposits consist of vertical pegmatite dike which was exposed as a small round hill 50 feet high, composed of quartz and potash feldspar. The quartz was previously mined in the 1920s and was shipped to Los Angeles. The quarry has remained idle since that time. It was estimated in 1957 that about 5,000 to 10,000 tons of quartz remain in the deposit. However, quartz is not considered an economical resource or suitable for aggregate production. The preferred rock for aggregate production in San Diego County generally consists of fresh crystalline rock or metavolcanic rock.

3.1.7.2 Regulatory Setting

Federal Regulations

There are no relevant federal regulations for mineral resources.

State Regulations

California Surface Mining and Reclamation Act

SMARA (California Public Resources Code [PRC] 2710 et seq.) was enacted by the California Legislature to address the need for a continuing supply of mineral resources and to prevent or minimize the negative impacts of surface mining to public health, property, and the environment. Pursuant to its provisions, the State Mining and Geology Board receives classification information from the California State Geologist and then prioritizes and designates lands containing mineral deposits of regional or statewide significance. Areas that are generally given highest priority for classification are those subject to urban expansion or other irreversible land uses that would preclude mineral extraction. Mineral lands are mapped according to jurisdictional boundaries (i.e., counties), mapping all mineral commodities at one time in the area, using the California Mineral Land Classification System (California Department of Conservation 2025).

Local Regulations

County of San Diego General Plan

The Mineral Resources section of the Conservation and Open Space Element of the General Plan (County of San Diego 2011b) identifies goals and policies intended to assure an adequate supply of mineral resources to support the economic activity projected to occur under the General Plan and to assure compliance with the requirements of the SMARA regarding the conservation of mineral resources and the permitting and reclamation of mining sites. The following goals and policies are identified:

- **GOAL COS-10: Protection of Mineral Resources.** The long-term production of mineral materials adequate to meet the local County average annual demand, while maintaining permitted reserves equivalent to a 50-year supply, using operational techniques and site reclamation methods consistent with SMARA standards such that adverse effects on surrounding land uses, public health, and the environment are minimized.
    - **COS-10.1 Siting of Development.** Encourage the conservation (i.e., protection from incompatible land uses) of areas designated as having substantial potential for mineral extraction. Discourage development that would substantially preclude the future development of mining facilities in these areas. Design development or uses to minimize the potential conflict with existing or potential future mining facilities. For purposes of this policy, incompatible land uses are defined by SMARA Section 3675.

- **COS-10.2 Protection of State-Classified or Designated Lands.** Discourage development or the establishment of other incompatible land uses on or adjacent to areas classified or designated by the State of California as having important mineral resources (MRZ-2), as well as potential mineral lands identified by other government agencies. The potential for the extraction of substantial mineral resources from lands classified by the State of California as areas that contain mineral resources (MRZ-3) shall be considered by the County in making land use decisions.
- **COS-10.3 Road Access.** Prohibit development from restricting road access to existing mining facilities, areas classified MRZ-2 or MRZ-3 by the State Geologist, or areas identified in the County Zoning Ordinance for potential extractive use in accordance with SMARA Section 2764.a.
- **COS-10.4 Compatible Land Uses.** Discourage the development of land uses that are not compatible with the retention of mining or recreational access to non-aggregate mineral deposits. See Policy COS-10.1 for a definition of incompatible land uses.
- **COS-10.6 Conservation of Construction Aggregate.** Encourage the continued operation of existing mining facilities and streamline the permitting of new mining facilities consistent with the goal to establish permitted aggregate resources that are sufficient to satisfy 50 years of County demand.
- **COS-10.7 Recycling of Debris.** Encourage the installation and operation of construction and demolition (C&D) debris recycling facilities as an accessory use at permitted (or otherwise authorized) mining facilities to increase the supply of available mineral resources.
- **COS-10.8 New Mining Facilities.** Develop specific permit types and procedures for the authorization of new mining facilities that recognize the inherent physical effects of mining operations and the public necessity for available mineral resources adequate to meet local demand, in accordance with PRC Section 2762.
- **COS-10.9 Overlay Zones.** Provide zoning overlays for MRZ-2 designated lands and a 1,300-foot-wide buffer area adjacent to such lands. Within these overlay zones, the potential effects of proposed land use actions on potential future extraction of mineral resources shall be considered by the decision makers.

San Diego County Zoning Ordinance, Sections 2820–2835, S82 Extractive Use Regulations

Sections 2820 et seq. of the San Diego County Zoning Ordinance are known as the S82 Extractive Use Regulations and are intended to identify and create areas within San Diego County where mining, quarrying, or oil extractive uses are permitted. Typically, the S82 Extractive Use Regulations would be applied to areas of mineral deposits to signify the presence of such deposits and notify adjacent or affected properties of the intention to allow extraction of minerals within the zone. They would be used to preserve areas with valuable mineral deposits until extraction can take place.

San Diego County Zoning Ordinance, Sections 6550–6556, Extractive Use Regulations

San Diego County Zoning Ordinance, Sections 6550 et seq., are known as the Extractive Use Regulations and provide the means for public review and regulation of mineral extraction and associated on-site processing operations.

County of San Diego Code of Regulatory Ordinances Sections 87.701–87.714, Surface Mining

In 2003, the Board of Supervisors added Sections 87.701 through 87.714, entitled Surface Mining, to the County Code of Regulatory Ordinances. This ordinance regulates all surface mining operations in the unincorporated areas of San Diego County, as authorized by the County Zoning Ordinance and SMARA, to ensure that

a) The continued mining of minerals will be permitted in a manner which will protect the public health and safety and will provide for the protection and subsequent beneficial use of mined and reclaimed land;

b) The possible adverse effects of surface mining operations on the environment, including air pollution, impedance of groundwater movement, water quality degradation, damage to aquatic or wildlife habitat, flooding, erosion and sedimentation, will be prevented or minimized; and

c) The production and conservation of minerals will be encouraged while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment.

This ordinance is intended to implement the minimum requirements of SMARA and to specify local requirements. The ordinance requires that no person conduct surface mining unless a MUP is obtained, a Reclamation Plan is approved as provided by the Zoning Ordinance and SMARA, and financial assurances for reclamation have been approved by the County. Grading performed pursuant to such a MUP or Reclamation Plan must be in accordance with a plot plan and conditions approved therewith.

3.1.7.3 Analysis of Project Effects and Determination as to Significance

Guidelines for the Determination of Significance

For the purposes of this section, the County's *Guidelines for Determining Significance and Report Format and Content Requirements – Mineral Resources* (County of San Diego 2008) guide the evaluation of whether a significant impact to mineral resources will occur as a result of project implementation. The project would have a significant impact to mineral resources if:

1. The project is:
   - On or within the vicinity (generally up to 1,300 feet from the site) of an area classified as MRZ-2; or
   - On land classified as MRZ-3; or
   - Underlain by Quaternary alluvium; or
   - On a known sand and gravel mine, quarry, or gemstone deposit;

   AND

   The project will result in the permanent loss of availability of a known mineral resource that would be of value to the region and the residents of the state;

   AND

   The deposit is minable, processable, and marketable under the technologic and economic conditions that exist at present or which can be estimated to exist in the next

50 years and meets or exceeds one or more of the following minimum values (in 1998 equivalent dollars):

- Construction materials (sand and gravel, crushed rock), $12,500,000
- Industrial and chemical mineral materials (limestone, dolomite, and marble [except where used as construction aggregate]; specialty sands, clays, phosphate, borates and gypsum, feldspar, talc, building stone and dimension stone), $2,500,000
- Metallic and rare minerals (precious metals [gold, silver, platinum], iron and other ferroalloy metals, copper, lead, zinc, uranium, rare earths, gemstones and semi-precious materials, and optical–grade calcite), $1,250,000

2. The project would result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Known Mineral Resource

The project site is within southeastern San Diego County, which includes no mapped MRZs (Figure 3.1.7-2). Specifically, it should be noted that the project site does not contain MRZ-2 zones within or adjacent to the boundaries; the MRZ-2 zone closest to the project site is located to the northwest roughly 50 miles away. The vast majority of existing MRZ-2 zones are mapped in Quaternary alluvial areas and Tertiary conglomerate deposits and therefore have irregular, organic limits defined by low-lying topographic drainages. Geologically, these areas are generally characterized by the presence of younger (Quaternary-aged) river channel, floodplain, and terrace deposits that have been eroded from the older (Tertiary to Cretaceous-aged) bedrock units, transported, and redeposited. They consist of naturally loose mixtures of sands and rounded gravels. Laboratory testing has also confirmed the physical and chemical characteristics of these mapped deposits are appropriate for Portland cement concrete (PCC)–grade aggregate. In contrast, the proposed project would be within a different geologic province than is typical of MRZ-2 zones, in that the project site is a predominantly underlain by colluvium and granitic rock with fine-grained silty sand deposits overlying the granitic rock. In addition, the project would be east and outside of the County-mapped P-C boundary which is an uncategorized zone. The site is also not in an area near existing aggregate production areas.

The nearest production areas within San Diego County are at least 35 miles away. Closer production areas in Imperial County are at least 20 miles away. Including the off-site open space easements, the project area encompasses approximately 1,036 acres. Most of the proposed development footprint is covered with rugged mountainous terrain and a light to dense growth of native shrubs and trees. A network of improved and unimproved roads provides access throughout the site. The Carrizo Gorge Railway easement is located within the southern portion of the site. Electrical transmission lines associated with SDG&E transect the western to central portions of the site. Documented historical mineral resource deposits, known as the Walker quarry, have been identified just outside the site (Figure 3.1.7-3). The Walker quarry deposits consist of a vertical pegmatite dike that was exposed as a small round hill 50 feet high; the deposits consist of quartz and potash feldspar. The quartz was previously mined in the 1920s and was shipped to Los Angeles. The quarry has remained idle since that time. It was estimated in 1957 that about 5,000 to 10,000 tons of quartz remain in the deposit. However, quartz is not considered an economical resource or suitable for aggregate production.

The preferred rock for aggregate production in San Diego County generally consists of fresh crystalline rock or metavolcanic rock. It should be noted that most of the western San Diego region is mapped as an MRZ-3 zone (San Diego County 2008). Generally, these areas geologically consist of the older bedrock

units, including the crystalline and metavolcanic rocks that are mapped over nearly two-thirds of San Diego County. These areas are also commonly found in rugged mountainous terrain relatively isolated from existing development and infrastructure. As noted in Miller (1996), these materials can be crushed to yield PCC-grade aggregate provided they possess the appropriate chemical characteristics. Despite considerable costs associated with crushing, additional processing, and transportation, crushed rock has been a feasible source.

Reclassification of an MRZ-3 zone to an MRZ-2 designation is under the purview of the California State Geologist; however, the proposed project is in an unmapped region of San Diego County. The criteria include determination that the "deposit is minable, processable, and marketable under the technologic and economic conditions that exist at present or which can be estimated to exist in the next 50 years and meets or exceeds (in 1996 equivalent dollars) $12,150,000 for construction materials" (Miller 1996). Note this equated to $5,000,000 in 1978 dollars when the guidelines were first written. In 2024 equivalent dollars, the value is currently equated to $24,005,000.00 (U.S. Bureau of Labor Statistics 2024).

As shown in Figures 3.1.7-1 and 3.1.7-2, an off-site biological open space easement would be granted over 448 acres of sensitive vegetation communities, special-status plant species, and habitat for special-status species to protect sensitive biological resources (see Appendix D.1). This easement would be for the protection of biological resources and prohibits all of the following on any portion of the land subject to said easement: grading; excavation; placement of soil, sand, rock, gravel, or other material; clearing of vegetation; construction, erection, or placement of any building or structure; vehicular activities; trash dumping; or use for any purpose other than as open space. The available potential resources within the off-site biological resources open space easement area, following application of setbacks, include up to 104 acres of potential resource, which amounts to roughly 1,245,816 tons of potential sand and aggregate. Assuming a price of $22.00 per ton, a density of 0.055 tons per cubic foot, and a waste factor of approximately 20%, the value of material would be roughly $19,933,056, which would not exceed the threshold ($24,005,000) for the County's definition of a significant impact (adjusted to 2024 inflation).

Due to the presence of abundant fine-grained colluvial silty and clayey sand deposits within the mapped colluvium, the site is not considered a marketable minable resource. In addition, the project site is not located on or within 1,300 feet of land classified as MRZ-2 and is not on a known gemstone deposit. Therefore, the project would have a **less than significant impact** with respect to the permanent loss of the minable, processable, and marketable mineral resources underlying portions of the project site, which do not exceed the County's minimum value thresholds.

Locally Important Mineral Resource

The project would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. The project site is not zoned as S82 by the Extractive Land Use Overlay or the General Plan Extractive Land Use Designation and Impact-Sensitive Land Use Designation. Further, no known mapped industrial and chemical materials nor metallic and rare minerals are known in the project area. Therefore, the project would have a **less than significant impact** on the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

3.1.7.4 Cumulative Impact Analysis

Other cumulative projects in the vicinity of the proposed project are similarly not located within a County-designated MRZ or have known mineral resources. Therefore, in combination with the cumulative projects, the project would not result in a **cumulatively considerable impact**.

3.1.7.5 Conclusion

Due to the presence of abundant fine-grained colluvial silty and clayey sand deposits within the mapped colluvium, the colluvium underlying the site is not considered a marketable minable resource. In addition, the project site is not located on or within 1,300 feet of land classified as MRZ-2 and is not on a known gemstone deposit.

The project site is adjacent to incompatible land uses (e.g., residential and commercial development) that require a 1,300-foot setback, and surrounded and transected by land uses (e.g., railroad tracks, electrical transmission lines, commercial airport, and county and state roadways) that would include a 100-foot setback for any mineral extraction to occur on the project site (see Figures 3.1.7-3 and 3.1.7-4). Accordingly, some potential mineral resources on the project site have already been lost due to land use incompatibility posed by setbacks. Regarding the Quaternary colluvium within the project site, based on the field mapping of the colluvium, it is estimated that the waste factor will likely exceed 20%. A factor of 20% is commonly used for commercial mining operations to consider the economic feasibility for recovery of the resource.

The composition of the mineral resources on the vast majority of the site along with transportation factors renders the resources unmarketable under the technologic and economic conditions that exist at present, or which can be estimated to exist in the next 50 years. As the project site is not within a County-designated MRZ and does not contain known mineral resources worthy of extraction, a **less than significant impact** on mineral resources would occur.

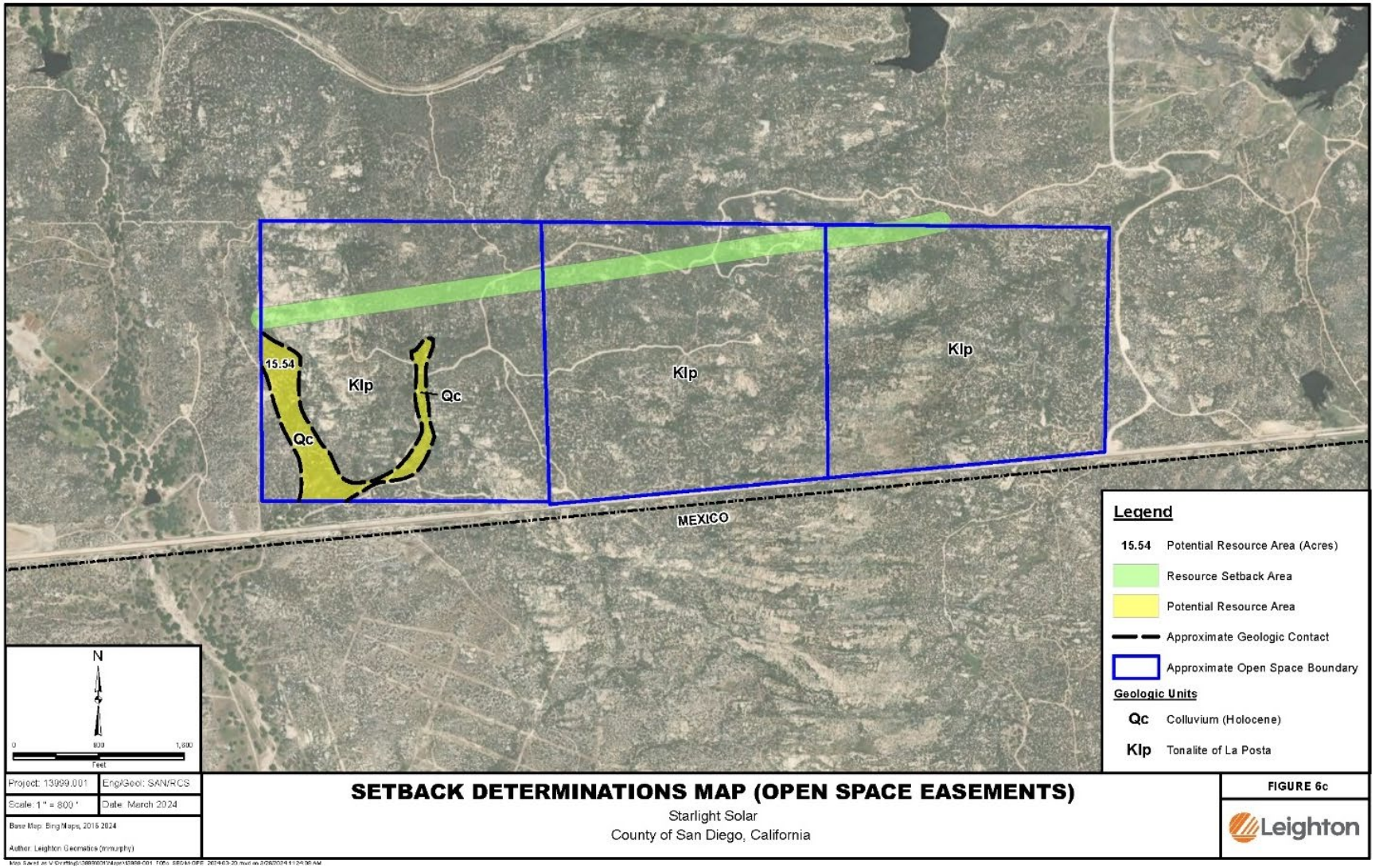

Figure 3.1.7-1. Setback Determinations for Open Space Easements

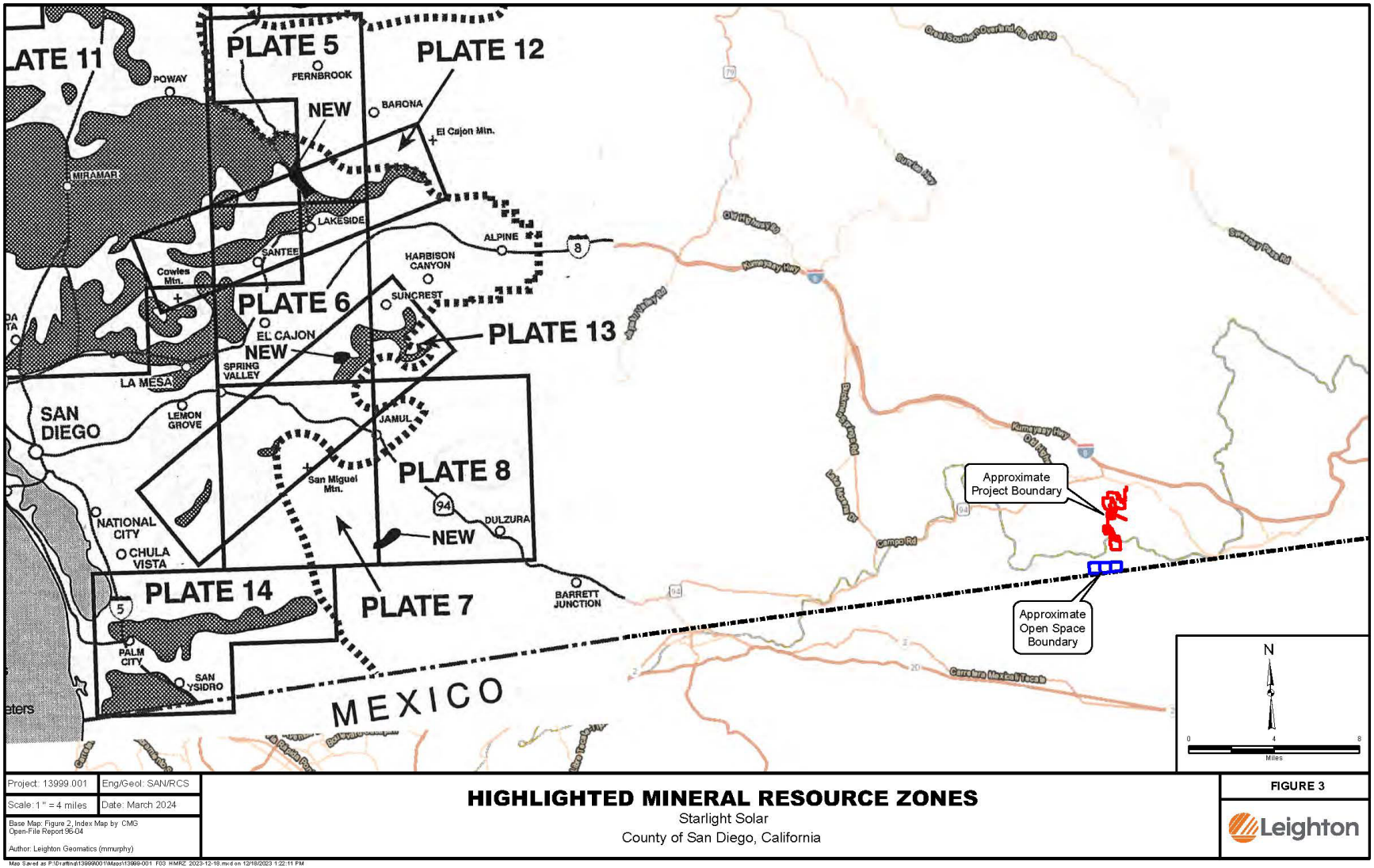

Figure 3.1.7-2. Highlighted Mineral Resource Zones

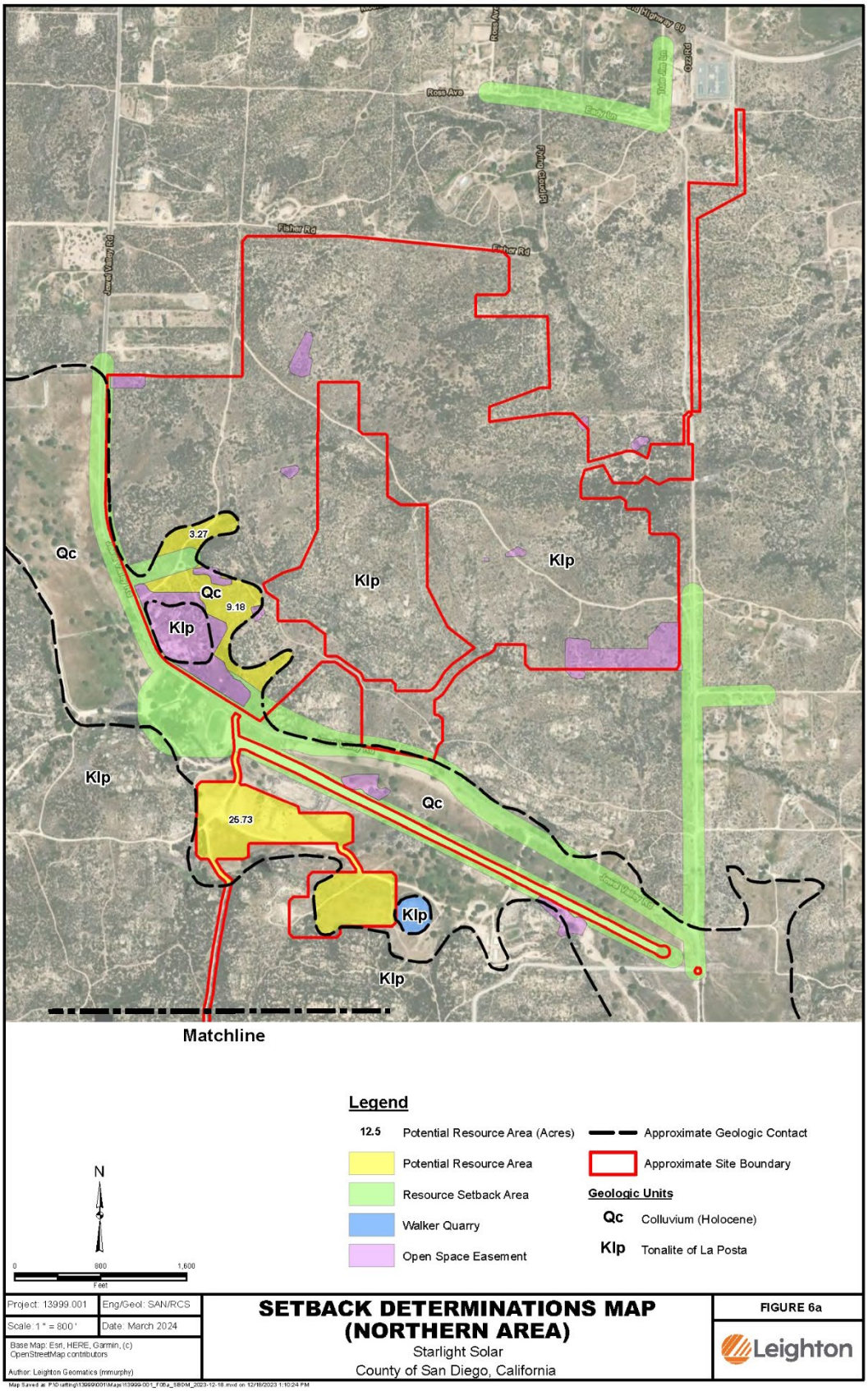

Figure 3.1.7-3. Setback Determinations for Northern Area

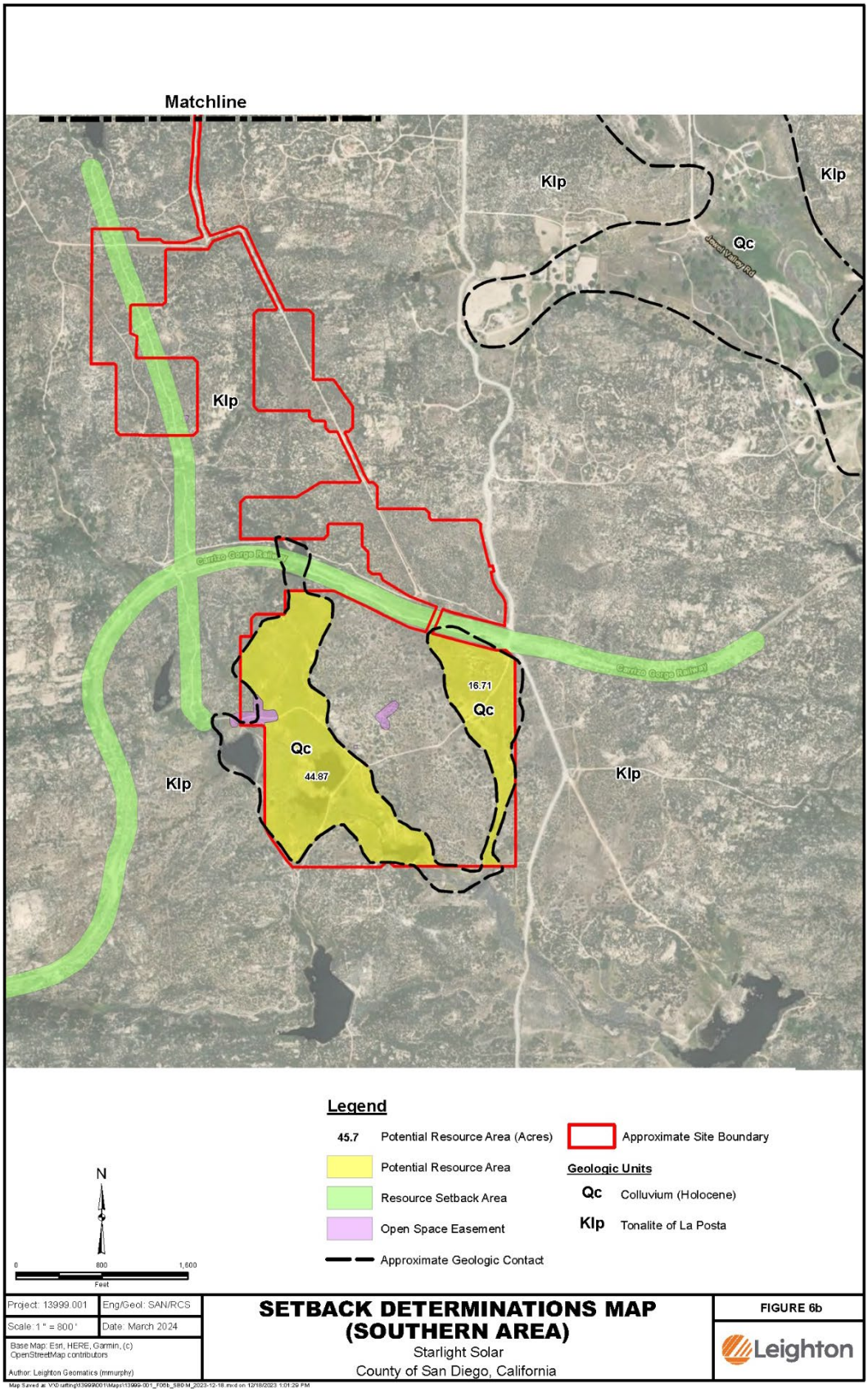

Figure 3.1.7-4. Setback Determinations for Southern Area