

## 3.12 MINERAL RESOURCES

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This section of the Program Environmental Impact Report (PEIR) describes mineral resources in the SCAG region, discusses the potential impacts of the proposed 2016 Regional Transportation Plan/Sustainable Communities Strategy (“2016 RTP/SCS,” “Plan,” or “Project”) on state and local reserves of mineral resources, identifies mitigation measures for the impacts, and evaluates the residual impacts. The potential for impacts on state and local reserves of mineral resources was evaluated in accordance with Appendix G of the 2015 California Environmental Quality Act (CEQA) Guidelines. Mineral resources within the SCAG region were evaluated at the programmatic level of detail, in relation to the general plans of the six counties and 191 cities within the six-county area, a review of *California Minerals and Mines*, a review of related literature germane to the SCAG region, and a review of SCAG’s 2012 RTP/SCS PEIR.<sup>1</sup>

Mineral resources, including construction aggregate, are essential to California’s infrastructure and constitute the highest-value commodity mined in California despite low cost per unit volume. Mineral resources are produced and consumed throughout the state and are effectively irreplaceable. Nonfuel mineral production in California consists of 32 minerals that are produced commercially from about 900 actively working mines. There were about 1,230 mines in the state as of 2010. California ranks sixth after Alaska, Minnesota, Utah, Arizona, and Nevada in the value of nonfuel mineral production, accounting for approximately 4.2 percent of the nation’s total, with a market value for 2010 of \$2.9 billion. California also leads the nation in the production of sand and gravel, and ranks second behind Texas in the production of Portland cement.<sup>2</sup> A continuous supply of aggregate materials for urban infrastructure is essential to the economy of Southern California. The counties and cities in the SCAG region depend on the California Geological Survey (CGS) to identify deposits of regionally significant aggregate resources.

### Definitions

**Mineral Resources:** Mineral resources are commercially viable aggregate or mineral deposits, such as sand, gravel, and other construction aggregate. These clusters or belts of mineral deposits are designated into four classes of Mineral Resource Zones (MRZs) that indicate the potential for a specific area to contain significant mineral resources:

- **MRZ-1:** Areas where available geological information indicated there is little or no likelihood for presence of significant mineral resources
- **MRZ-2:** Areas underlain by mineral deposits where geological data indicate that significant measured or indicated resources are present or where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists

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<sup>1</sup> California Department of Conservation, Division of Mineral and Geology. 2000. *California minerals and mines*. Report No. DMG CD 2000-001.

<sup>2</sup> California Department of Conservation, California Geological Survey. October 2014. *California’s construction aggregate resources*. Available at: [http://www.calafco.org/files/2014%20Annual%20Conference/Mineral\\_Resource\\_Oct\\_2014.pdf](http://www.calafco.org/files/2014%20Annual%20Conference/Mineral_Resource_Oct_2014.pdf)

- **MRZ-3:** Areas containing known mineral occurrences of undetermined mineral resources significance
- **MRZ-4:** Areas of known mineral occurrences where geological information does not rule out the presence or absence of significant mineral resources

The MRZs were initially mapped in 1980 as a result of the Surface Mining and Reclamation Act (SMARA) of 1975.<sup>3</sup> Substantial aggregate mineral resources in the SCAG region can be found in all six counties within the SCAG region. However, aggregate production in Imperial County is less than 0.5 million tons per year.<sup>4</sup>

### 3.12.1 REGULATORY FRAMEWORK

#### Federal

##### *Indian Mineral Development Act of 1982*

The Indian Mineral Development Act of 1982 (25 U.S. Code [USC] 2101–2108) permits Indian tribes, through the Secretary of the Interior, to enter into certain agreements for the disposition of tribal mineral resources through a Minerals Agreement. A Minerals Agreement provides for the exploration for or extraction of oil, gas, uranium, coal, geothermal, or other energy or nonenergy mineral resources for tribes that own a beneficial or restricted interest or provide for the sale or production of tribal mineral resources.

#### State

##### *Surface Mining and Reclamation Act (SMARA) of 1975*

The SMARA (Public Resources Code [PRC] 2710–2796) requires that the State Department of Mines and Geology Board map areas throughout the state that contain regionally significant mineral resources. Construction aggregate resources (sand and gravel) deposits were the first commodity selected for classification by the Board. Once mapped, the Mines and Geology Board is required to designate for future use those areas that contain aggregate deposits that are of prime importance in meeting the region's future need for construction-quality aggregates. The primary objective of SMARA is for each jurisdiction to develop policies that would conserve important mineral resources, where feasible, that might otherwise be unavailable when needed. SMARA requires that once policies are adopted, local agency land use decisions must be in accordance with its mineral resource management policies. These decisions must also balance the mineral value of the resource to the market region as a whole, not just their importance to the local jurisdiction.

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<sup>3</sup> California Department of Conservation, Division of Mines and Geology. Accessed 11 September 2015. *Surface mining and reclamation policies and procedures: guidelines for classification and designation of mineral lands*. Available at: <http://www.conservation.ca.gov/smgb/Guidelines/Documents/ClassDesig.pdf>

<sup>4</sup> California Geological Survey. 2012. *Aggregate sustainability in California*. Available at: [http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS\\_52\\_2012.pdf](http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS_52_2012.pdf)

## *Government Code Section 65302(d)*

Government Code Section 65302(d) states that a conservation element of the general plan shall address minerals and other natural resources.

### **Local**

#### *County and City General Plans*

For the most part, local planning guidelines have been developed in county and city general plans to identify and encourage the utilization and conservation of mineral and energy resources, encourage sustainable management of resources, prevent or minimize adverse effects to the environment, and protect public health and safety. Pursuant to Government Code Section 65302, a general plan must include “A conservation element for the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, *minerals*, and other natural resources” (emphasis added). As discussed in **Section 3.11, Land Use and Planning**, zoning codes implement the goals and objectives of General Plans.

### **3.12.2 EXISTING CONDITIONS**

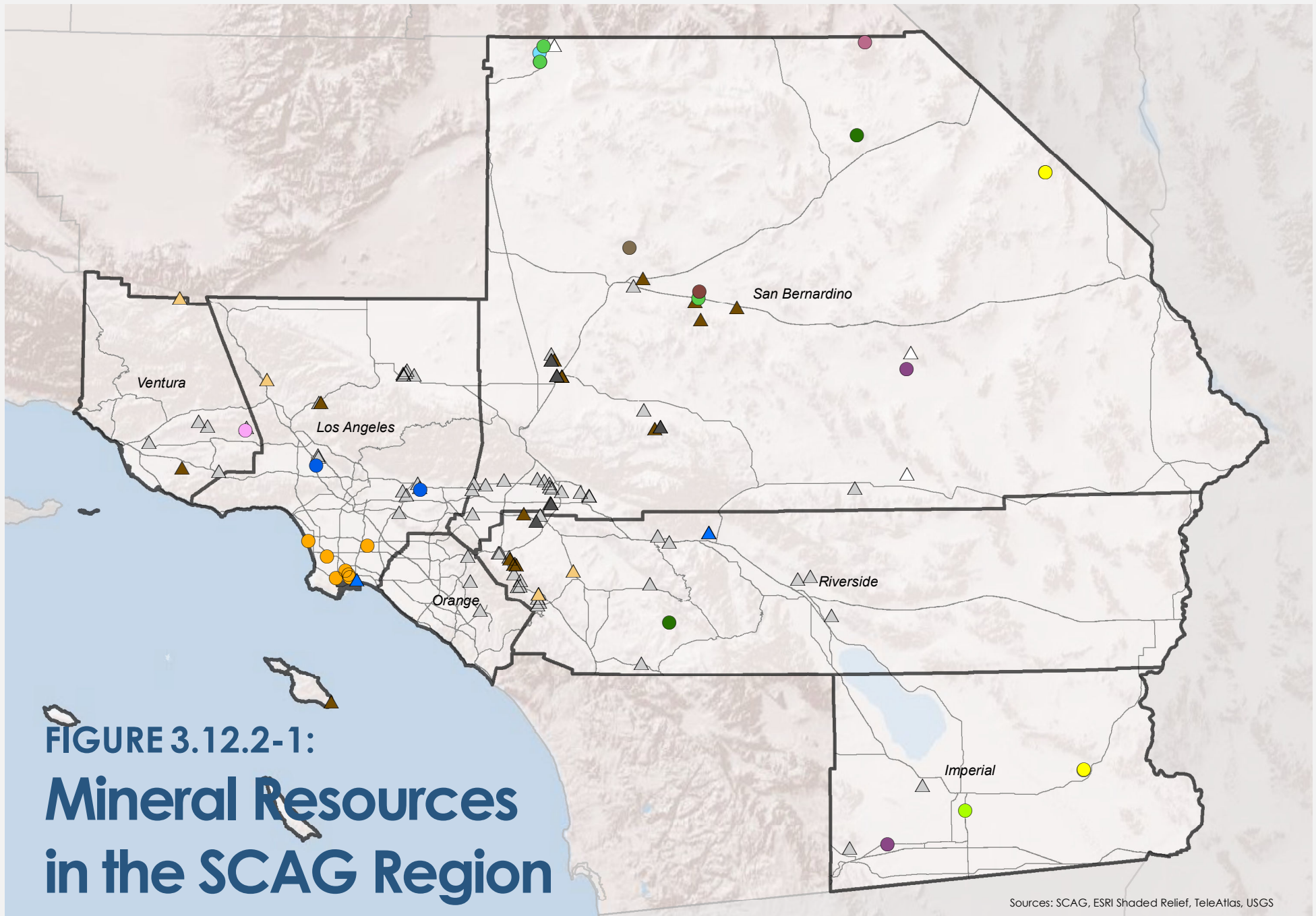
#### **Regionally Important Mineral Resources**

County and city general plans are required to identify significant mineral resource areas and apply appropriate land use designations to ensure their future availability. Many city and county general plans in the SCAG region reference and map local mineral resources. Most of the comprehensive mineral resource mapping in California has been completed for urban areas where there is a high probability that converted land uses would be incompatible with mining. Gold, sand, and gravel are the primary mineral resources still extracted throughout the SCAG region (**Figure 3.12.2-1, Mineral Resources in the SCAG Region**).

*Construction aggregate* refers to sand and gravel (natural aggregates) and crushed stone (rock) that are used as Portland-cement-concrete aggregate, asphaltic-concrete aggregate, road base, railroad ballast, riprap, and fill for the production of other construction materials. According to the CGS, the state currently has approximately 4.3 billion tons of permitted resources, and the CGS estimates the state would need approximately 13.5 billion tons of aggregate in the next 50 years.<sup>5</sup> California’s construction industry is greatly dependent on readily available aggregate deposits that are within a reasonable distance to market regions. Aggregate is a low-unit-value, high-bulk-weight commodity; therefore, aggregate for construction must be obtained from nearby sources in order to minimize costs to the consumer. If nearby aggregate sources do not exist, then transportation costs can quickly exceed the value of the aggregate. The CGS prepares information regarding aggregate resources in the state (**Figure 3.12.2-2, Aggregate Supply in the SCAG Region**).

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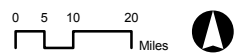
<sup>5</sup> Department of Conservation, Natural Resources Agency. Accessed 30 June 2015. *State Mining and Geology Board annual report 2013–2014*. Available at: [http://www.conservation.ca.gov/smgb/reports/Annual%20Reports/Documents/SMGB\\_AR\\_13-14.pdf](http://www.conservation.ca.gov/smgb/reports/Annual%20Reports/Documents/SMGB_AR_13-14.pdf)



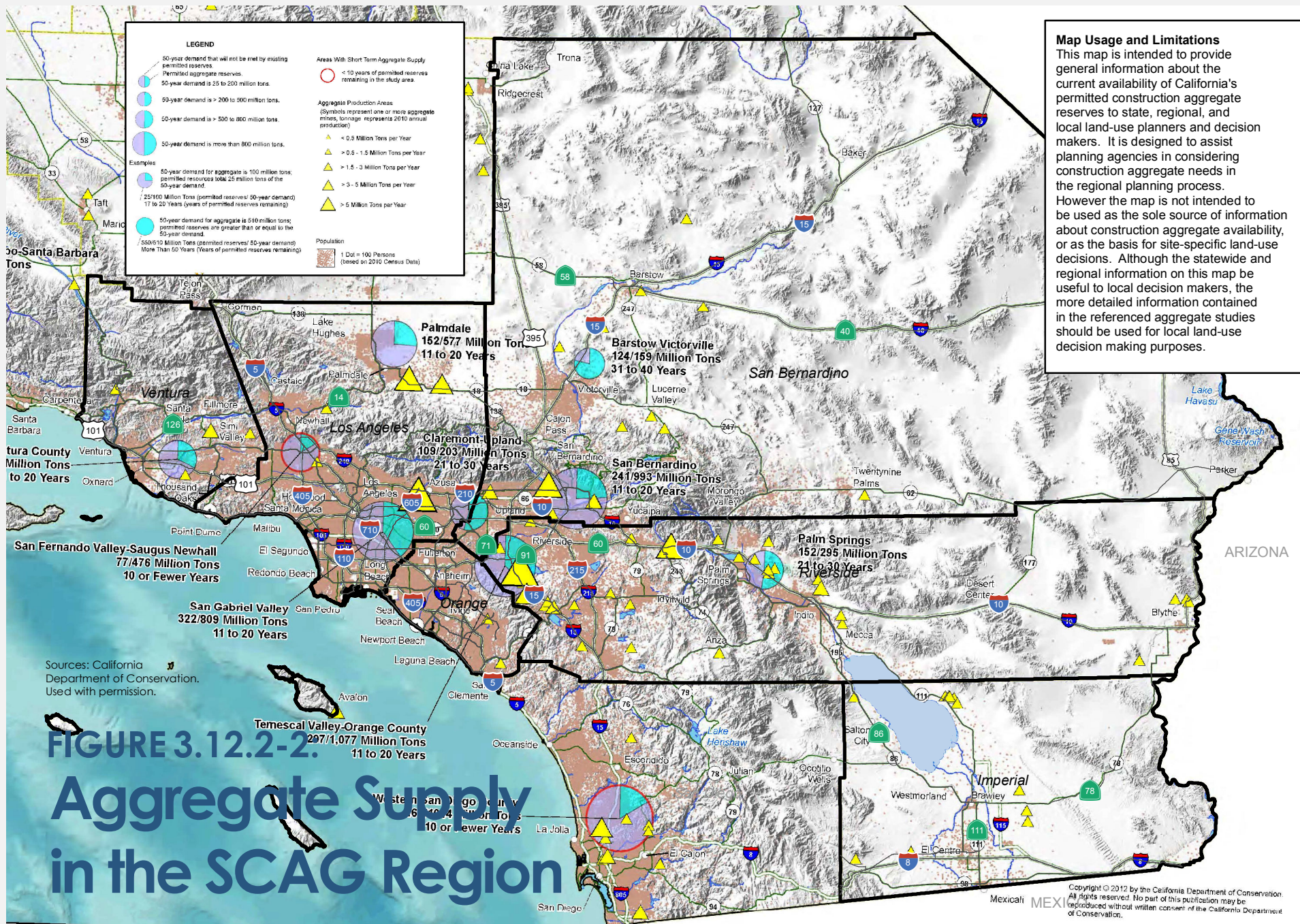
**FIGURE 3.12.2-1:**  
**Mineral Resources**  
**in the SCAG Region**

Sources: SCAG, ESRI Shaded Relief, TeleAtlas, USGS

<b>Active Mine/Plant (Commodity)</b>	▲ Cement	● Feldspar	● Lime	● Silver	● Talc
● Bentonite	▲ Common Clay and Shale	● Gemstones	● Perlite	● Soda Ash	● Zeolites
● Boron	▲ Crushed Stone	● Gold	△ Salt	● Sodium Sulfate	
	▲ Dimension Stone	● Gypsum	△ Sand and Gravel	● Sulfur	







**FIGURE 3.12.2-2.**  
**Aggregate Supply**  
**in the SCAG Region**



The 50-year demand is based on a per capita consumption forecast, developed from historic data (**Table 3.12.2-1, Permitted Aggregate Resources and 50-Year Demand in the SCAG Region**). This method has been shown to be reasonably accurate in forecasting demand; it tends to smooth out spikes in demand that occur as a result of large-scale projects in a particular area. (It should be noted that although there are aggregate mines in Imperial County, the CGS does not provide permit and demand data for Imperial County.)

**TABLE 3.12.2-1  
PERMITTED AGGREGATE RESOURCES AND 50-YEAR DEMAND IN THE SCAG REGION**

	County*	50-Year Demand (million tons)	Permitted Aggregate Reserves (million tons)	Permitted Aggregate Reserves Compared to 50-Year Demand (percent)	Projected Years Remaining
Claremont-Upland P-C Region	San Bernardino	203	109	54	21 to 30
Palmdale P-C Region	Los Angeles	577	152	26	11 to 20
Palm Springs P-C Region	Riverside	295	152	52	21 to 30
San Bernardino P-C Region	San Bernardino	993	241	24	11 to 20
San Fernando Valley/Saugus-Newhall	Los Angeles	476	77	16	10 or fewer
San Gabriel Valley P-C Region	Los Angeles	809	322	40	11 to 20
Temescal Valley-Orange County	Orange	1,077	297	28	11 to 20
Ventura County	Ventura	298	96	32	11 to 20
Total SCAG Region		4,728	1,446	N/A	N/A

**NOTE:**

\*Aggregate reserves not analyzed for Imperial County.

**SOURCE:**

California Department of Conservation, California Geological Survey. Accessed 11 September 2015. *Aggregate Sustainability in California*. Available at: [http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS\\_52.pdf](http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS_52.pdf)

Just under one-third of the projected 50-year demand is currently permitted in the SCAG region, exclusive of mines in Imperial County (**Table 3.12.2-1**). The CGS estimates that there are up to 74 billion tons of nonpermitted resources state-wide. Nonpermitted aggregate resources are deposits that may meet specifications for construction aggregate, are recoverable with existing technology, have no land overlying them that is incompatible with mining, and currently are not permitted for mining. Resource areas include areas that are known to contain aggregate resources and have compatible land uses such as agricultural land, open space lands (not designated as parks), and forest lands. Uses that are considered incompatible with mining include urban areas, county and state parks, national parks, and golf courses.

The estimated nonpermitted resources in the region are in excess of 37 million tons. While the estimated amount of nonpermitted resources is large, it is unlikely that all of these resources would ever be mined because of social, environmental, or economic factors. Aggregate resources located too close to urban or environmentally sensitive areas can limit or stop their development. These resources may also be located too far from a potential market to be economically viable. In spite of such possible

constraints, current nonpermitted aggregate resources are the most likely future sources of construction aggregate potentially available to meet California's continuing demand.

### 3.12.3 THRESHOLDS OF SIGNIFICANCE

The 2016 RTP/SCS would have a significant impact related to mineral resources if it would have the potential to:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- 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.

## Methodology

The methodology for determining the significance of impacts on mineral resources impacts compares the existing conditions (2015) to the future 2040 conditions under the Plan, as required by CEQA Guidelines Section 15126.2(a). Specifically, the volume of aggregate material likely to be required to support the transportation projects and urban development encouraged by land use strategies in the 2016 RTP/SCS was evaluated in relation to availability of permitted mineral resources, and other potential mineral resource recovery sites in the SCAG region.

### 3.12.4 IMPACT ANALYSIS

#### **IMPACT MIN-1: Potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.**

##### ***Significant Impact***

Transportation projects as well as development patterns influenced by land use strategies identified in the 2016 RTP/SCS would require substantial amounts of aggregate resources to construct, constituting a significant impact. The six-county and 191-city SCAG region has approximately 1,446 million tons of permitted aggregate reserves (**Table 3.12.2-1**). The CGS estimates that the SCAG region would need approximately 4,728 million tons of aggregate over the next 50 years.<sup>6</sup> The difference of 3,282 million tons would need to be permitted over the next 50 years to meet the projected demand. **Table 3.12.2-1** indicates that, of the eight areas of permitted aggregate resources, six have a minimum of 10 to 11 projected years remaining, and two have a minimum of 21 projected years remaining. The SCAG region's construction industry is greatly dependent on readily available aggregate deposits that are within a reasonable distance to market regions. Aggregate is a low-unit-value, high-bulk-weight commodity or material required for construction of most transportation projects and development projects that must be obtained from nearby sources in order to minimize costs to the consumer. If nearby sources do not exist, then transportation costs quickly could exceed the value of the aggregate.

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<sup>6</sup> California Department of Conservation, California Geological Survey. Accessed 11 September 2015. *Aggregate Sustainability in California*. Available at: [http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS\\_52.pdf](http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS_52.pdf)

**Figure 3.12.2-1** shows the 50-year demand that would not be met in aggregate production areas in and around the SCAG region. Additionally, **Table 3.12.2-1** shows that just under one-third of the projected 50-year demand is currently permitted in the SCAG region (excluding mines in Imperial County). The 2016 RTP/SCS includes transportation system improvements, such as new or expanded highway/arterials, high-occupancy vehicle (HOV) lanes and connectors, new light and heavy rail, goods movement projects, and infrastructure that would require substantial amounts of aggregate resources. In addition, the regional land use strategies identified in the 2016 RTP/SCS could influence population distribution by focusing growth in HQTAs, existing suburban town centers, and more walkable, mixed-use communities. The development projects encouraged by these land use strategies included in the 2016 RTP/SCS could also result in a demand for aggregate resources for construction.

As a programmatic, long-range planning document, the 2016 RTP/SCS does not include specific construction information related to large transportation projects. However, it is anticipated that the transportation projects included in the 2016 RTP/SCS and anticipated development could require substantial amounts of aggregate resources to construct. Therefore, impacts would be significant, requiring the consideration of mitigation measures.

**IMPACT MIN-2: Potential to 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.**

***Significant Impact***

The 2016 RTP/SCS includes transportation projects that have the potential to impact mineral resources because they could take place in previously undisturbed areas, and development patterns encouraged by land use strategies identified in the 2016 RTP/SCS have the potential to occur in mineral resource zones, constituting a potentially significant impact. Improvements and modifications to existing rights-of-way, such as HOV lanes, high-occupancy toll (HOT) lanes, new bus-ways and capacity enhancement facilities, mixed flow lanes, and right-of-way maintenance would have less potential to impact mineral resources because these transportation project locations have previously been disturbed. Construction of new transportation projects, like additional lanes and right-of-way maintenance, have the potential to impact aggregate and mineral resources.

As this PEIR analyzes impacts to mineral resources on a programmatic level only, it is anticipated that as individual projects are evaluated, the scope of analysis would require a determination regarding the potential for a project to 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. Construction of transportation projects and new development influenced and encouraged by land use strategies (e.g., focusing new growth in the region's high-quality transit areas, or HQTAs) included in the 2016 RTP/SCS would result in a potentially significant impacts, requiring the consideration of mitigation measures.



### 3.12.5 CUMULATIVE IMPACTS

#### **IMPACT MIN-1: Potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.**

##### ***Significant Cumulative Impact***

Implementation of the transportation projects included in the 2016 RTP/SCS, when taken into consideration with related development and infrastructure projects within the SCAG region and surrounding areas, and anticipated growth and land use development pattern, would contribute to significant cumulative impacts with regard to the potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Similarly, the 2016 RTP/SCS includes a set of regional land use strategies that are intended to guide future land development patterns to focus new growth in HQTAs, existing suburban town centers, and walkable mixed-use communities. While the specific impact of this pattern of development relative to the loss of a known mineral resource is unknown, it could result in cumulative significant impacts. As a programmatic, long-range planning document, the 2016 RTP/SCS does not include specific construction information related to major transportation projects. However, it is anticipated that the transportation projects included in the 2016 RTP/SCS and anticipated development could require substantial amounts of aggregate resources to construct.

**Figure 3.12.2-1** shows the 50-year demand that would not be met in aggregate production areas in and around the SCAG region. Additionally, **Table 3.12.2-1** shows that just under one-third of the projected 50-year demand is currently permitted in the SCAG region (excluding mines in Imperial County). The 2016 RTP/SCS includes transportation system improvements, such as new or expanded highway/arterials, HOV lanes and connectors, new light and heavy rail, goods movement projects, and infrastructure associated with these projects that would require substantial amounts of aggregate resources. In addition, the mobility and regional land use policies identified in the 2016 RTP/SCS would influence population distribution by focusing growth in HQTAs, existing suburban town centers, and more walkable, mixed-use communities. The development projects encouraged by these land use strategies included in the 2016 RTP/SCS as well as anticipated development would also result in a demand for aggregate resources for construction. Construction of the 2016 RTP/SCS transportation projects and development patterns influenced by land use strategies, when considered with other anticipated infrastructure, residential, and commercial development in the SCAG region, would contribute to cumulative impacts to mineral resources of statewide and local importance in the region, constituting a significant cumulative impact requiring the consideration of mitigation measures.

#### **IMPACT MIN-2: Potential to 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.**

##### ***Significant Cumulative Impact***

Implementation of the transportation projects included in the 2016 RTP/SCS, when taken into consideration with related development and infrastructure projects within the SCAG region and surrounding areas, and anticipated growth and land use development patterns, would contribute to

cumulative significant impacts with regard to the potential to 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 2016 RTP/SCS transportation projects and associated development patterns influenced by land use strategies could be constructed atop mineral resources, impeding access to these resources, exacerbating the availability of regional and locally important mineral resource recovery sites. Given the potential for permitted resources to not meet demand both inside and outside the SCAG region, the 2016 RTP/SCS would contribute to a cumulatively significant impact, requiring the consideration of mitigation measures.

### **3.12.6 MITIGATION MEASURES**

Mitigation measures as they pertain to each CEQA question related to mineral resources are described below. Mitigation measures are categorized into two categories: SCAG mitigation and project-level mitigation measures. SCAG mitigation measures shall be implemented by SCAG over the lifetime of the 2016 RTP/SCS. Project-level mitigation measures can and should be implemented by Lead Agencies for transportation and development projects, as applicable and feasible.

#### **IMPACT MIN-1: Potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.**

##### *SCAG Mitigation Measures*

**MM-MIN-1(a)(1):** SCAG shall coordinate with the Department of Conservation, California Geological Survey to maintain a database of (1) available mineral resources in the SCAG region including permitted and unpermitted aggregate resources and (2) the anticipated 50-year demand for aggregate and other mineral resources. Based on the results of this survey, SCAG shall work with local agencies on strategies to address anticipated demand, including identifying future sites that may seek permitting and working with industry experts to identify ways to encourage and increase recycling to reduce the demand for aggregate.

**MM-MIN-1(a)(2):** SCAG shall facilitate, encourage, and coordinate with local jurisdictions to review, identify, and update aggregate and mineral resources in their jurisdictions through cooperation, information sharing, and regional program development as part of SCAG's ongoing regional planning efforts, such as web-based planning tools for local government including CA Lots, and other GIS tools and data services, including, but not limited to, Map Gallery, GIS library, and GIS applications, and direct technical assistance efforts such as Compass Blueprint's Toolbox Tuesday Training series and sharing of associated online training materials. Resource agencies, such as the California Department of Conservation and the U.S. Geology Survey shall be consulted during this update process. Using the above tools, SCAG shall assist local jurisdictions with developing long range plans and strategies to meet projected demand and ensure that transportation projects and associated development do not preclude the ability to recover known aggregate resources that would be of value to the region and the residents of the state.

### *Project-Level Mitigation Measures*

**MM-MIN-1(b):** Consistent with the provisions of Section 15091 of the State CEQA Guidelines, SCAG has identified mitigation measures capable of avoiding or reducing the significant effects on the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan that are within the jurisdiction and responsibility of the California Department of Conservation, and/or Lead Agencies.

Where the Lead Agency has identified that a project has the potential for significant effects, the Lead Agency can and should consider mitigation measures to ensure compliance with SMARA, California Department of Conservation regulations, local general plans, specific plans, and other laws and regulation governing mineral or aggregate resources, as applicable and feasible. Such measures may include the following, other comparable measures identified by the Lead Agency:

- Provide for the efficient use of known aggregate and mineral resources or locally important mineral resource recovery sites, by ensuring that the consumptive use of aggregate resources is minimized and that access to recoverable sources of aggregate is not precluded, as a result of construction, operation and maintenance of projects.
- Where avoidance is infeasible, minimize impacts to the efficient and effective use of recoverable sources of aggregate through measures that have been identified in county and city general plans, or other comparable measures:
  - Recycle and reuse building materials resulting from demolition, particularly aggregate resources, to the maximum extent practicable.
  - Identify and use building materials, particularly aggregate materials, resulting from demolition at other construction sites in the SCAG region, or within a reasonable hauling distance of the project site.
  - Design transportation network improvements in a manner (such as buffer zones or the use of screening) that does not preclude adjacent or nearby extraction of known mineral and aggregate resources following completion of the improvement and during long-term operations.
  - Avoid or reduce impacts on known aggregate and mineral resources and mineral resource recovery sites through the evaluation and selection of project sites and design features (e.g., buffers) that minimize impacts on land suitable for aggregate and mineral resource extraction by maintaining portions of MRZ-2 areas in open space or other general plan land use categories and zoning that allow for mining of mineral resources.

**IMPACT MIN-2: Potential to 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.**

### *SCAG Mitigation Measures*

**MM-MIN-1(a)(1) and MM-MIN-1(a)(2).**

### *Project-Level Mitigation Measures*

**MM-MIN-1(b).**

#### **3.12.7 LEVEL OF SIGNIFICANCE AFTER MITIGATION**

**IMPACT MIN-1: Potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.**

Implementation of Mitigation Measures **MM-MIN-1(a)(1)**, **MM-MIN-1(a)(2)**, and **MM-MIN-1(b)** would reduce potential impacts related to the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. However, due to the substantial growth and large number of transportation and development projects anticipated direct, indirect, and cumulative impact would remain significant and unavoidable.

**IMPACT MIN-2: Potential to 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.**

Implementation of Mitigation Measures **MM-MIN-1(a)(1)**, **MM-MIN-1(a)(2)**, and **MM-MIN-1(b)** would reduce potential impacts related to 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. However, due to the substantial growth and large number of transportation and development projects anticipated, direct, indirect, and cumulative impacts would remain significant and unavoidable.