

## **5.9 GEOLOGY, SOILS, AND MINERAL RESOURCES**

This section characterizes the geology, soils, and mineral resources of El Dorado County; the discussion of naturally occurring asbestos is found in Section 5.8, Human Health and Safety. This section is based primarily on information collected from the California Geological Survey (CGS) (formerly California Division of Mines and Geology [CDMG] of the California Department of Conservation (DOC]), U.S. Geological Survey (USGS), Natural Resources Conservation Service (NRCS) (previously known as the Soil Conservation Service [SCS]), as well as other local and regional sources.

A two-part approach was used to identify potential environmental effects of the various General Plan alternatives: (1) a spatial analysis of the county's geologic resources using geographic information systems (GIS), and (2) an evaluation of proposed General Plan policies that address these resources. The spatial analysis involved collecting available spatial data related to current geological, soil, and mineral features and overlaying the data on the various General Plan alternative maps to identify potential conflicts and/or environmental impacts. The evaluation of proposed policies subsequently focuses on whether policy direction would mitigate potential conflicts/impacts and conserve geologic resources over the planning horizon and through theoretical buildout of the General Plan alternatives.

### **5.9.1 EXISTING CONDITIONS**

#### **PHYSICAL ENVIRONMENT**

##### **Geology and Seismic Conditions**

###### *Regional Geology*

El Dorado County is located in the Sierra Nevada geomorphic province of California, which is east of the Great Valley province and west of the Range and Basin province. The Sierra Nevada province is characterized by steep-sided hills and narrow, rocky stream channels. This province consists of Pliocene and older deposits that have been uplifted as a result of plate tectonics, granitic intrusion, and volcanic activity. Subsequent glaciation and additional volcanic activity are factors that led to the east-west orientation of stream channels.

Exhibit 5.9-1 illustrates existing geologic formations in the County. The southwestern foothills of El Dorado County are composed of rocks of the Mariposa Formation that include amphibolite, serpentine, and pyroxenite. The northwestern areas of the county consist of the Calaveras Formation, which includes metamorphic rock such as chert, slate, quartzite, and mica schist. In addition, limited serpentine formations are located in this area. The higher

peaks in the county consist primarily of igneous and metamorphic rocks with granite intrusions, a main soil parent material at the higher elevations.

### ***Seismicity***

Seismicity is defined as the geographic and historical distribution of earthquakes, or more simply, earthquake activity. Seismic activity may result in geologic and seismic hazards including seismically induced fault displacement and rupture, ground shaking, liquefaction, lateral spreading, landslides and avalanches, and structural hazards.

Earthquakes are measured either based on energy released (Richter Magnitude scale) or the intensity of ground shaking at a particular location (Modified Mercalli scale). The Richter Magnitude scale measures the magnitude of an earthquake based on the logarithm of the amplitude of waves recorded by seismographs, with adjustments made for the variation in the distance between the various seismographs and the epicenter of the earthquake. This scale starts with 1.0 and has no maximum limit. The scale is logarithmic—an earthquake with a magnitude of 2.0 is 10 times the magnitude (30 times the energy) of an earthquake with a magnitude of 1.0. The Modified Mercalli scale is an arbitrary measure of earthquake intensity; it does not have a mathematical basis. This scale is composed of 12 increasing levels of intensity that range from imperceptible shaking (Scale I) to catastrophic destruction (Scale XII).

Based on historical seismic activity and fault and seismic hazards mapping, El Dorado County is considered to have relatively low potential for seismic activity, and is located beyond the highly active fault zones of the coastal areas of California. The County's fault systems and associated seismic hazards are described below.

### ***Fault Systems***

Earthquake activity is intrinsically related to the distribution of fault systems (i.e., faults or fault zones) in a particular area. A fault is defined as a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side; a fault zone is a zone of related faults that commonly are braided and subparallel, but may be branching and divergent (DOC 1997). Depending on activity patterns, faults and fault-related geologic features may be classified as active, potentially active, or inactive. An active fault is an area where movement has historically taken place over the last 11,000 years (the Holocene Epoch) and where movement can be expected to take place within the next 100 years.

Exhibit 5.9-1

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These faults that are judged to be capable of ground rupture or shaking pose an unacceptable risk for any proposed structure. Potentially active faults are those faults considered to have been active during the Quaternary time (approximately the last 1.6 million years). All other faults are considered inactive.

Existing fault zone systems within El Dorado County are illustrated in Exhibit 5.9-2. The fault mapping distinguishes faults by period of displacement (i.e., historic, Holocene, late Quaternary, Quaternary, and pre-Quaternary) and location characteristics (i.e., well located, approximately located or inferred, and concealed). The distribution of known faults is concentrated in the western portion of the county, with several isolated faults in the central county area and the Lake Tahoe Basin. Fault systems mapped in western El Dorado County include the West Bear Mountains Fault; the East Bear Mountains Fault; the Maidu Fault Zone; the El Dorado Fault; the Melones Fault Zone of the Clark, Gillis Hill Fault; and the Calaveras–Shoo Fly Thrust.

No active faults have been identified in El Dorado County. One fault, part of the Rescue Lineament–Bear Mountains fault zone, is classified as a well located late-Quaternary fault (DOC 2000); therefore, it represents the only potentially active fault in the county. It is part of the Foothill Fault Suture Zone system, which was considered inactive until a Richter scale magnitude 5.7 earthquake occurred near Oroville on August 1, 1975 (DOC 1990). All other faults located in El Dorado County are classified as pre-Quaternary (inactive).

### Seismic Hazards

Seismic activity along fault systems poses a substantial hazard to property and human health and safety. Types of hazards that are commonly associated with seismic activity include ground shaking, fault rupture, liquefaction, lateral spreading, landslides/avalanches, and structural hazards. CGS is the lead state agency in delineating areas or “zones” that are subject to seismic hazards. A brief description of these hazards and their applicability to El Dorado County are shown below.

#### *Seismic Ground Shaking*

Potential ground shaking intensities are depicted in probabilistic seismic hazard maps. The potential intensity of seismic events varies across El Dorado County, generally increasing from west to east, with the highest potential ground shaking intensity located in the Lake Tahoe Basin (DOC 1996).

### *Fault Rupture*

Fault or surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Not all earthquakes result in surface rupture. Fault rupture typically occurs along preexisting faults, which represent areas of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault creep, which is the slow rupture of the earth's crust. Sudden displacements are more damaging to structures because they are accompanied by shaking.

The probability of fault rupture in El Dorado County is based on Earthquake Fault Zone maps prepared by CGS pursuant to the Alquist-Priolo Fault Zoning Act. Earthquake Fault Zones are regulatory zones around active faults. The zones vary in width, but average about one-quarter mile wide. No portion of the county is located within an Alquist-Priolo Earthquake Fault Zone (DOC 1997). For more details on the Alquist-Priolo Fault Zoning Act, please refer to the Regulatory Environment subsection below.

### *Liquefaction*

Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other rapid loading. This type of ground failure is most likely to occur in water-saturated silts, sands, and gravels having low to medium density. When a soil of this type is subjected to vibration, it tends to compact and decrease in volume. If the groundwater is unable to drain during vibration, the tendency of the soil to decrease in volume results in an increase in pore-water pressure. When the pore-water pressure builds up to the point where it is equal to the overburden pressure (effective weight of overlying soil), the effective stress becomes zero. In this condition, the soil loses its sheer strength and assumes the properties of a heavy liquid.

No portion of El Dorado County is located in a Seismic Hazard Zone (i.e., regulatory zones that encompass areas prone to liquefaction and earthquake-induced landslides) based on the Seismic Hazards Mapping Program administered by CGS (DOC 2003). Therefore, El Dorado County is not considered to be at risk from liquefaction hazards.

### *Lateral Spreading*

Lateral spreading induced by earthquake shaking may occur as a result of soils moving toward an unsupported surface or slope even though the slope may not be steep. Lateral displacement has occurred in soft saturated clays such as bay and lagoon deposits. During ground shaking, these soft materials may flow, form wave-shape masses, or squeeze laterally.

Exhibit 5.9-2

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This type of ground failure can also occur beneath fills, with the fill moving and developing severe longitudinal cracks. Lateral spreading is typically associated with areas experiencing liquefaction; because liquefaction hazards are not present in El Dorado County, it can be concluded that the county is not at risk from lateral spreading.

#### *Seismically Induced Landslides and Avalanches*

Seismic activity may also trigger landslides and avalanches. As indicated above, El Dorado County does not contain any Seismic Hazard Zones. Therefore, the county is not considered to be at risk from seismically induced landslides and avalanches. Non-seismically induced landslides and avalanches are discussed below.

#### *Structural Hazards*

Structural hazards represent structures that may be unstable in the event of an earthquake. All new structural proposals are reviewed by the County Building Department for seismic loading through the building permit process; this review is based on California Uniform Building Code (UBC) requirements. However, there are older structures in the county that were developed before existing County building code requirements were enacted. Specifically, there are existing structures that were developed before the enactment of the Riley Act (1933), which prohibits new unreinforced masonry buildings, and the Field Act (1933), which places safety requirements on the construction of public schools. Many of these structures are located in incorporated jurisdictions, such as Placerville, and are not subject to County building requirements. No specific evaluation of the overall condition of these buildings has been made. However, the County has adopted the Uniform Code for the Abatement of Dangerous Buildings, which addresses the structural integrity of older buildings on a case-by-case basis (refer to Regulatory Environment for more information).

#### *Landslides*

The term landslide includes a wide range of ground movement, such as rockfalls, deep failure of slopes, and shallow debris flows (mudflows). There are many different types of landslides, including translational/rotational slide, earthflow, debris slide, debris flow/torrent track, debris slide/amphitheater slope, and inner gorge. Many factors influence the potential for landslide occurrences, such as geological conditions, drainage characteristics, slope gradient and configuration, vegetation, and removal of underlying support. Cuts and fills associated with road building activity are a major cause of slope instability.

El Dorado County has been subject to landslide hazards in the past. The most notable recent landslide event occurred in 1997 along U.S. Highway 50 (U.S. 50) east of Placerville. The

since-named Mill Creek landslide resulted in the closure of U.S. 50 and significant direct and indirect economic losses. Since this landslide, USGS, in cooperation with the Eldorado National Forest, has actively monitored landslide activity along this stretch of U.S. 50. Other landslides have occurred along U.S. 50 in the American River Canyon and along State Route (SR) 89 in the Emerald Bay area.

Currently there are no statewide mapping programs for landslide hazards in California. Landslide hazard identification maps were produced from 1986 through 1995, but were discontinued when the Landslide Hazard Mapping Act was repealed. However, historical mapping efforts indicate that landslides can be expected to occur in the western third of the county along the Foothills Fault Zone because of the planes of weakness associated with faulting in the area, and on the eastern slope of the Sierra Nevada, west of Emerald Bay (DOC 1973).

### *Avalanche*

An avalanche is a type of landslide involving unstable snowpack. The most destructive type of avalanche is the “slab” avalanche in which a mass of cohesive snow releases as a unit. Avalanches can be expected to occur in areas with steep slopes (30–50%) with significant snowfall. These conditions commonly exist along the Sierra Nevada mountain range above 5,000 feet. However, the most susceptible areas are on north and east-facing (leeward) slopes of the Sierra crest during and after heavy snowfall events (Martinelli 1974, Wilson 1975).

Avalanche hazards in El Dorado County are restricted to the areas around Echo Summit, SR 89 (along the west shore of Lake Tahoe), and Fallen Leaf Lake. U.S. 50 and SR 89 commonly are closed several times each winter season, typically in the Echo Summit and Emerald Bay areas, because of sliding snow and rock. The California Department of Transportation (Caltrans) periodically implements active avalanche control at Echo Summit and areas around Emerald Bay.

The U.S. Forest Service (USFS) has identified avalanche hazard zones in the Echo Lake and Fallen Leaf Lake areas that may pose a hazard to private vacation cabins in these areas. However, an active avalanche hazard mapping program has not been developed for other areas within El Dorado County.

Exhibit 5.9-3 presents snow load conditions throughout the county. This information is used primarily by the County Building Department in developing design standards for structures located in high snow load areas. Although not directly related to avalanche hazards, this

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information serves as a useful proxy for avalanche-prone areas because it depicts the amount of snowfall that is expected in a particular location.

In researching this issue, Placer County was contacted because their proximity and similarity of conditions. Placer County addresses avalanche hazards in its planning and regulatory processes, including the implementation of an active avalanche hazard mapping program as part of the Placer County Avalanche Management Ordinance. Avalanche-related policies in the Placer County General Plan: require the preparation of a soils engineering and geologic-seismic analysis before permitting development in areas prone to geological or seismic hazards, including avalanches; prohibit the issuance of permits for new developments in potential avalanche hazard areas (PAHA) unless project proponents can demonstrate that such a development will be safe under anticipated snow loads and conditions of an avalanche; require maintenance of maps of potential avalanche hazard areas; and require new development in areas of avalanche hazard to be sited, designed, and constructed to minimize avalanche hazards. The Placer County Avalanche Management Ordinance implements these general plan policies. Specifically, this ordinance established PAHAs depicting areas with avalanche potential based on approved studies that designate a minimum probability of occurrence greater than 1 in 100 per year, or where avalanche damage is documented after adoption of the ordinance. Development restrictions, for the most part, apply to discretionary projects, with single-family dwelling units having the option to provide notice on the property deed in lieu of development restrictions. Other noticing provisions include requiring all structures within a PAHA to post a notice that the structure is located in a potential avalanche hazard area. This ordinance is not intended to preclude the development of any parcel, provided that proper design and construction safeguards are taken.

## **Soils**

Soil is generally defined as the unconsolidated mixture of mineral grains and organic material that mantles the land surfaces of the earth. Soils can develop on unconsolidated sediments and/or weathered bedrock. Soil characteristics reflect the five major influences on their development: topography, climate, biological activity, parent (source) material, and time. Soil surveys for western El Dorado County and the Lake Tahoe Basin were prepared by the SCS in 1974. In addition, a more recent (1985) soil survey has been published for the Eldorado National Forest area, which is composed mainly of nonjurisdictional land.

For this EIR, soil mapping is shown by soil association. A soil association represents a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and is named for the major soil.

Exhibits 5.9-4a and 5.9-4b show the soil associations in western and eastern El Dorado County, respectively. (Note: The soil associations on the exhibits approximate, but do not correspond directly to the soil associations provided in the soil surveys; they are based on digital soil survey data, and represent the best information available for use in this EIR.) Tables 5.9-1 and 5.9-2 summarize the various characteristics of soil associations within the county.

<b>Table 5.9-1 Soil Characteristics in Western El Dorado County</b>			
<b>Soil Association</b>	<b>Shrink-Swell Potential</b>	<b>Slope Range</b>	<b>Elevation Range (feet)</b>
Auberry-Ahwahnee-Sierra	low/moderate	5–50%	500–2,500
Auburn-Argonaut	low/moderate/high	2–70%	500–1,800
Boomer-Auburn	low/moderate	2–70%	500–3,500
Rescue	low/moderate	2–50%	1,000–2,500
Serpentine Rock Land-Delpiedra	moderate	3–50%	500–1,800
Cohasset-Aiken-McCarthy	low/moderate	3–50%	2,000–5,500
Holland-Musick-Chaix	low/moderate/high	5–70%	1,800–5,000
Mariposa-Josephine-Sites	low/moderate	3–70%	1,500–5,500
Source: Soil Conservation Service, 1974a			

<b>Table 5.9-2 Soil Characteristics in the Lake Tahoe Basin</b>				
<b>Soil Association</b>	<b>Shrink-Swell Potential</b>	<b>Erosion Potential</b>	<b>Slope Range</b>	<b>Elevation Range (feet)</b>
Loamy Alluvial Land-Elmira, Wet Variant-Celio	low/moderate	slight	0–5%	6,200–6,500
Elmira-Gefo	low	slight/moderate	0–30%	6,200–6,500
Inville-Jabu	low/moderate	slight/moderate	0–30%	6,200–7,000
Meeks-Tallac	low	slight/moderate/high	0–60%	6,200–8,600
Cagwin-Toem	low	moderate/high	5–70%	6,500–9,500
Rock Land-Stony Colluvial Land	N/A	moderate	2–75%	N/A
Waca-Meiss	low	moderate/high	0–60%	6,200–9,500
N/A: Not applicable				
Source: Soil Conservation Service 1974b				

Exhibit 5.9-4a, Soil Associations within Western El Dorado County

Exhibit 5.9-4b, Soil Associations in the Lake Tahoe Basin

## *Soil Types*

### Western El Dorado County

Soils located on jurisdictional lands on the west slope of El Dorado County consist of well-drained silt and gravelly loams divided into two physiographic regions, the Lower and Middle Foothills and the Mountainous Uplands (SCS 1974a).

There are a total of eight soil associations in western El Dorado County. Five soil associations occur in the Lower and Middle Foothills region:

- < Auberry-Ahwahnee-Sierra: Well-drained coarse sandy loams and sandy loams formed in material weathered from granitic rocks.
- < Auburn-Argonaut: Well-drained silt loams and gravelly loams formed in material weathered from basic rocks and metasedimentary rocks.
- < Boomer-Auburn: Well-drained silt loams and gravelly loams formed in material weathered from basic igneous rocks or metasedimentary rocks.
- < Rescue: Well-drained sandy loams formed in material weathered from basic rocks.
- < Serpentine Rock Land-Delpiedra: Excessively drained to somewhat excessively drained rock land and loams formed in material weathered from ultra-basic rocks.

Three soil associations are present in the mountainous uplands:

- < Cohasset-Aiken-McCarthy: Well-drained cobbly loams and loams formed in material weathered from volcanic conglomerate.
- < Holland-Musick-Chaix: Well-drained coarse sandy loams and sandy loams formed in material weathered from granitic rocks.
- < Mariposa-Josephine-Sites: Well-drained gravelly silt loams, silt loams, and loams formed in material weathered from metasedimentary rocks.

### Lake Tahoe Basin

Seven soil associations comprise the El Dorado County portion of the Lake Tahoe Basin, and are organized into three major groups: (1) Nearly level to gently sloping soils along streams, on fans, and in meadows; (2) nearly level to steep soils on moraines, glacial outwash terraces, and fans; and (3) the gently sloping to very steep soils of the mountains (SCS 1974b).

The Loamy Alluvial Land-Elmira, Wet Variant-Celio Association is the only soil association associated with nearly level to gently sloping soils along streams, on fans, and in meadows. It is characterized as somewhat poorly drained to poorly drained, gravelly loam, coarse sands, and loamy coarse sands to silt loams).

Soil associations on nearly level to steep soils on moraines, glacial outwash terraces, and fans include:

- < Elmira-Gefo: Nearly level to moderately steep, somewhat excessively drained gravelly loam coarse sands.
- < Inville-Jabu: Nearly level to moderately steep, well drained and moderately well drained coarse sandy loams that are deep to very deep over a pan.
- < Meeks-Tallac: Nearly level to steep, moderately well drained to somewhat excessively drained gravelly to extremely stony loam coarse sands that are deep to very deep over a pan.

The other three soil associations are in gently sloping to very steep soils of the mountains:

- < Cagwin-Toem: Gently rolling to very steep, somewhat excessively drained and excessively drained loamy coarse sands and gravelly coarse sands that are shallow to deep over granitic rock.
- < Rock Land-Stony Colluvial Land: Gently sloping to very steep land that is 50–90% rock outcrop, cobblestones, stones, and boulders.
- < Waca-Meiss: Strongly sloping to steep, well drained and excessively drained cobbly coarse sandy loams and cobbly loams that are moderately deep to shallow over andesite or andesitic tuff.

### National Forest Land

National Forest lands comprise a substantial proportion of the county's land area. The Eldorado National Forest Soil Survey indicates that there are three soil temperature zones in the survey area (Mesic Zone, Frigid Zone, and Cryic Zone), which contain 11 map units classified at the series or higher taxonomic level. Soil units in each temperature zone are as follows:

- < Mesic Zone: Cohasset-McCarthy-Crozier, McCarthy-Ledmount, Jocal-Mariposa, Chaix-Pilliken-Holland, Rock Outcrop-Maymen-Lithic Xerumbrepts, and Hartless-Neuns-Mieruf.
- < Frigid Zone: Waca-Windy, Ledford-Notned-Lumberly, and Tallac-Gerle-Xerumbrepts.
- < Cyric Zone: Rock Outcrop-Cryumbrepts and Lithic Cryumbrepts-Andic Cryumbrepts.

### ***Erosion***

Erosion is defined as a combination of processes in which the materials of the earth's surface are loosened, dissolved, or worn away, and transported from one place to another by natural agents. There are two types of soil erosion, wind erosion and water erosion. Erosion potential in soils is influenced primarily by loose soil texture and steep slopes. Loose soils can be eroded by water or wind forces, whereas soils with high clay content are generally susceptible only to water erosion. The potential for erosion generally increases as a result of human activity, primarily through the development of facilities and impervious surfaces and the removal of vegetative cover.

Because much of El Dorado County is characterized as having steep slopes, there are many areas that are subject to erosion. For the purposes of this EIR, critical slopes (i.e., slopes greater than 25%) have been mapped to identify areas likely to pose a physical constraint to development (Exhibit 5.9-5). Development on slopes greater than 25% tend to require engineering applications that act to reduce development potential. This critical slope mapping serves as a useful proxy in identifying areas that would be susceptible to relatively high rates of erosion. Table 5.9-3 shows the quantity of land within each market area with critical slopes.

More than half (53%) of the county's land area has a slope greater than 25%. Of this area, nearly half (49%) is located in the American River Market Area. Several market areas are characterized by predominantly steep slopes (i.e., greater than 50% of land area), including Pollock Pines (#6), Pleasant Valley (#7), Georgetown/Garden Valley (#11), Lake Tahoe Basin (#12), American River (#13), and Mosquito (#14).

### ***Expansive Soils***

Expansive soils are soils that increase in volume when they absorb water and shrink when they dry out. When buildings are placed on expansive soils, foundations may rise during each wet season and fall during each dry season. This movement may result in cracking foundations, distortion of structures, and warping of doors and windows, which may result in structural hazards.

**Table 5.9-3  
Land Area with Slopes Greater than 25% by Market Area**

	<b>Market Area</b>	<b>Critical Slope (acres)</b>	<b>Percentage of Market Area with Critical Slope</b>
1	El Dorado Hills	6,475	22.9
2	Cameron Park/Shingle Springs/Rescue	9,890	24.3
3	Diamond Springs	13,827	46.1
4	Placerville/Camino	11,217	42.8
5	Coloma/Gold Hill	11,583	44.3
6	Pollock Pines	17,163	62.3
7	Pleasant Valley	23,430	54.2
8	Latrobe	10,755	30.5
9	Somerset	23,183	47.8
10	Cool/Pilot Hill	20,223	44.4
11	Georgetown/Garden Valley	76,393	56.7
12	Lake Tahoe Basin	67,867	62.1
13	American River	288,394	57.8
14	Mosquito	9,190	60.9
<b>Total</b>		<b>589,591</b>	<b>53.1</b>
Source: USGS 2001, EDAW 2002			

Expansive soils are directly related to areas with a high shrink-swell potential. Soil surveys typically rate shrink-swell potential in soils on a low, medium, and high basis. Generally, soils in western El Dorado County have a low to moderate shrink-swell potential. Data from the digital soil survey indicate that 68% of soils in western El Dorado County have a low or moderate shrink-swell rating, but only 0.01% have a high rating; the remaining areas are typically rock formations and are not rated (NRCS 2002). In the Lake Tahoe Basin, the shrink-swell potential in soils is predominantly low (NRCS 1999).

**Mineral Resources**

Mineral resources are usually mineral derivatives but can include geothermal and natural gas deposits. Because mineral resources can take millions of years to replenish naturally after extraction, they are considered “nonrenewable” resources.

**EXHIBIT 5.9-5**  
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**EXHIBIT 5.9-5**  
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El Dorado County contains a wide variety of mineral resources. Both the USGS and CGS have evaluated the potential locations and production capacity of various types of extractive resources throughout the county. Metallic mineral deposits, gold in particular, are considered the most significant extractive mineral resource and the 1849 California “Gold Rush” originated from gold discovered in El Dorado County. Other metallic minerals found in the county include silver, copper, nickel, chromite, zinc, tungsten, mercury, titanium, platinum, and iron. Nonmetallic mineral resources include building stone, limestone, slate, clay, marble, soapstone, sand, and gravel.

### ***Mineral Resources Classifications***

Pursuant to the Surface Mining and Reclamation Act of 1975 (SMARA), the California State Mining and Geology Board oversees the Mineral Resource Zone (MRZ) classification system. The MRZ system characterizes both the location and known/presumed economic value of underlying mineral resources. Local agencies are required to use the classification information when developing land use plans and making land use decisions. Mineral land classification reports and maps have been developed for the project area, specifically the Auburn (1983), Camino and Mokelumne Hill (1987), Folsom (1984), Georgetown (1983), and Placerville (1983) 15-minute quadrangles. These mineral land classification reports and maps are available for review at CGS.

The mineral resource classification system uses four main MRZs, as described in Table 5.9-4. These MRZ categories are based on the degree of available geologic information, the likelihood of significant mineral resource occurrence, and the known or inferred quantity of significant mineral resources.

Areas classified as MRZ-2a or MRZ-2b (referred to hereafter as MRZ-2) are considered important mineral resource areas. Exhibit 5.9-6 shows the MRZ-2 areas within the county based on designated Mineral Resource (-MR) overlay areas. The -MR overlay areas are based on mineral resource mapping published in the mineral land classification reports referenced above. Where the MRZ-2 zones overlapped Community Regions and Rural Centers, the -MR overlay was not applied because of the inherent conflicts with mineral resource extraction activities and the existing, established residential and other higher intensity land uses within those planning concept areas. Areas where MRZ-2 lands were not included in the overlay designation include portions of the Placerville and Diamond Springs community regions, portions of the Garden Valley and Kelsey rural centers, and part of the Crystal Boulevard platted lands area as depicted on the 1996 General Plan land use map. Overall, it is clear that the majority of the county’s important mineral resource deposits are concentrated in the western third of the county.

**Table 5.9-4  
Mineral Resource Classification System**

<b>Classification</b>	<b>Description</b>
<b>MRZ-1</b>	Areas where available geologic information indicates that there is little likelihood of the presence of mineral resources.
<b>MRZ-2</b>	<p>MRZ-2a: Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present. Areas classified MRZ-2a contain discovered mineral deposits that represent either measured or indicated reserves as determined by such evidence as drilling records, sample analyses, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.</p> <p>MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered mineral deposits that represent either economic or inferred resources as determined by limited sample analyses, exposure, and past mining history. Further exploration work and/or changes in technology or economics could result in upgrading areas classified MRZ-2b. The MRZ-2b designation is applied to areas where geologic evidence indicates there is a high likelihood that economic concentration of minerals are present.</p>
<b>MRZ-3</b>	<p>MRZ-3a: Areas underlain by geologic settings within which undiscovered mineral resources similar to known deposits in the same producing district or region may be reasonably expected to exist (hypothetical resources). Lands classified MRZ-3a represent areas in a geologic setting that are favorable environments for the occurrence of specific mineral deposits. In the classification diagram, these lands are referred to as hypothetical resources. Further exploration work within these areas could result in the reclassification of specific locations into the MRZ-2a or MRZ-2b categories. MRZ-3a areas are considered to have a moderate to high potential for the discovery of economic mineral deposits.</p> <p>MRZ-3b: Areas that may contain undiscovered mineral resources that occur either in known types of deposits in favorable geologic settings where mineral discoveries have not been made or in types of deposits as yet unrecognized for their economic potential. Lands classified MRZ-3b represent areas in geologic settings that appear to be favorable environments for the occurrence of specific mineral deposits. In the California Mineral Land Classification diagram, these are referred to as speculative resources. Further exploration work could result in the reclassification of all or part of these areas into the MRZ-3a category or specific localities into the MRZ-2a or MRZ-2b categories. MRZ-3b is applied to lands where geologic evidence leads to the conclusion that it is plausible for economic mineral deposits to be present.</p>
<b>MRZ-4</b>	Areas where geologic information does not rule out either the presence or absence of mineral resources. MRZ-4 is commonly applied to areas of unknown mineral resources that occur within a broader favorable terrain known to host economic mineral deposits. It must be emphasized that MRZ-4 does not simply indicate a low likelihood of the presence of mineral resources. Exploration work and development of new concepts in economic geology could result in the reclassification of areas assigned MRZ-4 to the MRZ-2a and MRZ-2b categories.
Source: California State Mining and Geology Board 1979	

### ***Mining Sites and Operations***

Historically, there have been numerous mining operations throughout El Dorado County. However, presently there are 16 regulated mines in the county that have been assigned a California Mine ID number by the State Office of Mine Reclamation (Exhibit 5.9-7). Of these, eight are active mine operations, five have been reclaimed, two are idle, and one has been closed per County order to cease and desist mining operations.

## **REGULATORY/PLANNING ENVIRONMENT**

This subsection presents the regulatory and planning environments associated with the resources described above. It is intended to provide pertinent information related to the public agencies providing oversight of geologic resources, as well as specific laws, regulations, and/or planning guidance pertaining to the treatment of such resources.

### **County Building Permit Process**

In order to understand the applicable regulatory and planning environment for specific geologic resources, it is important to understand the local permit process that implements many of these measures. Below is a brief description of the County building permit process. The existing County building permit process varies depending on the type of development proposed. All structural developments, including construction of a single-family residence, must obtain a building permit from the County Building Department. As part of the permit application process, the project applicant must, at a minimum, submit a site and building plan.

The site plan must show existing topography, proposed grading, and storm water control measures, including erosion and sediment control measures that are applicable to all residential and commercial projects. As described in the County Grading Ordinance, the erosion and sediment control measures are based on the time of year construction occurs, with different requirements for the periods October 15–May 15 (the rainy season) and May 15–October 15. The building plans must demonstrate compliance with all adopted building codes.

It is the responsibility of the Building Department to review permit applications for structures. This is a ministerial process that includes a review of zoning requirements; however, zoning requirements may be reviewed jointly with the Planning Department, if necessary. Applications for discretionary residential projects (e.g., subdivisions) are reviewed by the Planning Department and Department of Transportation, with final approval made by the Planning Commission or Zoning Administrator. Some multifamily and nonresidential

Exhibit 5.9-6

Important Mineral Resources

**Exhibit 5.9-7**

**Mining Sites**

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**Exhibit 5.9-7**

**Mining Sites**

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development may also require review by the Planning Department and Department of Transportation and discretionary approval by the Zoning Administrator or Planning Commission.

The Building Department will review site and design requirements for conformance with the appropriate County Building Code. A building permit is issued once all requirements and standards have been met.

A grading permit is only required if a project meets certain criteria as detailed in the County Grading Ordinance (described below). A standard single-family residence would not typically require a grading permit, but it would need to comply with all protective measures found in the Grading Ordinance as part of the building permit process.

A soils/geotechnical report is required for commercial projects and certain nondiscretionary residential projects (i.e., projects where fill material is placed onsite, a cut or fill exceeding 10 feet in depth, or projects that increase soil-bearing values). All discretionary development must also conduct a soils/geotechnical study; these projects must further comply with all provisions in the Design and Improvements Standards Manual (described below).

### **Geology and Seismicity Regulatory/Planning Programs**

#### ***Alquist-Priolo Earthquake Fault Zoning Act***

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as “Earthquake Fault Zones” around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Local agencies must regulate most development projects within the zones. Projects include all land divisions and most structures for human occupancy. There are no Earthquake Fault Zones subject to the Alquist-Priolo Earthquake Fault Zoning Act in El Dorado County.

#### ***Seismic Hazards Mapping Act***

The Seismic Hazards Mapping Act addresses nonsurface fault rupture earthquake hazards, including liquefaction and seismically induced landslides. Passed by the State Legislature in

1990, this law was codified in the California Public Resources Code (PRC) as Division 2, Chapter 7.8A, and became operative in April 1991. The Seismic Hazards Mapping Act resulted in a mapping program that is intended to reflect areas that have the potential for liquefaction, landslide, strong earth ground shaking, or other earthquake and geologic hazards. No Seismic Hazard Zones have been identified in El Dorado County.

### ***El Dorado County Building Code***

The County Building Code consists of provisions included in Title 15 (Building and Construction) of the County Code. As it pertains to seismicity, Chapter 15.16 (Uniform Building Code) and Chapter 15.36 (Uniform Code for the Abatement of Dangerous Buildings) of the County Building Code are based on state codes that have been adopted by the County, as required by law.

### **California Uniform Building Code**

The State of California provides minimum standards for building design through the California UBC (California Code of Regulations [CCR], Title 24). The California UBC Code is based on the UBC, which is used widely throughout the United States (generally adopted on a state-by-state or district-by-district basis), and has been modified for conditions within California. For the purposes of this analysis, the California UBC will be referred to as the UBC. State regulations and engineering standards related to geology, soils, and seismicity in the UBC (2001) are reflected in the County Building Code requirements. The UBC includes a seismic zone map to determine applicable seismic standards for proposed structures. Seismic zones range from 0 to 4, with Zone 0 being the least active and Zone 4 the most active. All of El Dorado County is located in Seismic Zone 3 (El Dorado County 2003). All structures built in the county must comply with UBC requirements for this zone.

The design and construction of buildings must comply with the County Building Code at the time of construction. If a soils/geotechnical study was required for the project (see criteria above), the recommendations of the study must be incorporated in the design of foundations and buildings to ensure the structural integrity of structures and public safety at proposed developments.

## Soils-Related Regulatory/Planning Programs

### *County Grading, Erosion, and Sediment Control Ordinance*

The County Grading, Erosion, and Sediment Control Ordinance (Grading Ordinance) (Chapter 15.14 of the County Code) establishes provisions for public safety and environmental protection associated with grading activities on private property. The ordinance does all of the following:

- < sets forth rules and regulations to control excavation, grading, and earthwork construction, including fills and embankments;
- < establishes the administrative procedures for issuance of permits; and
- < provides for approval of plans and inspection of grading construction and all grading specific to single-parcel site improvements, except single-family residence construction, unless exceeding prescriptive standards as defined in the County *Design and Improvement Standards Manual*.

Where the grading or earthwork involves multiple parcels, parcel maps, subdivisions, land divisions or roads, the *Design and Improvement Standards Manual* must be used for design purposes.

This ordinance requires grading permits for any grading activity that has the potential to:

- < involve more than 250 cubic yards of grading material, or cuts and fills greater than 5 feet in vertical depth;
- < create unstable or erodible slopes;
- < denude more than 10,000 square feet of surface on a 10% or steeper grade;
- < encroach into a perennial or seasonal watercourse that either has a watershed larger than 50 acres or is designated by a solid or dashed blue line on a USGS 7.5-minute quadrangle map; or
- < occur within the Lake Tahoe Basin Special Restrictions and Exemptions area..

The grading permit applies to all projects with certain exemptions. The most significant exemption is for grading pursuant to a subdivision map and an approved subdivision improvement plan. Specific conditions and General Plan policies are applied to subdivisions.

The list of criteria for which a grading permit is required ensures that all projects not in a subdivision with the potential to generate erosion and sedimentation are subject to a variety of pollution control measures.

Exemptions from grading permits also apply to:

- < excavation in connection with a swimming pool authorized by a valid building permit;
- < grading necessary for agricultural operations, unless such grading creates a cut or fill that could endanger any structure or public road or cause sediment in any watercourse or drainage conduit;
- < trenching and grading incidental to the installation and construction of County approved underground pipelines, septic fields, or electrical conduit and the drilling of wells and fence posts; and
- < maintenance of firebreaks and fire roads keeping the property substantially in its original condition.

A grading plan, which must include an erosion and sediment control plan that complies with the provisions of the Grading Ordinance, is required as a part of the grading permit. The ordinance requires that sedimentation be contained on the construction site.

### ***Design and Improvement Standards Manual***

The *Design and Improvement Standards Manual* was adopted in 1986 with the purpose of regulating building standards for discretionary projects. The manual requires a Land Capability Report for tentative maps that “shall define the suitability for a tract with regard to waste discharge, building foundations, grading and drainage, traffic circulation, and passive solar opportunities.” The soils and geology component of the report is required to include the following information:

- < groundwater effects on slope stability,
- < seismic risks,
- < earth movement unrelated to seismicity (e.g., landslides), and
- < expansive soils.

### ***Hillside Guidelines***

The *Hillside Guidelines* (1993), an amendment to the Design and Improvement Standards Manual (Resolution #322-92), are intended to present a minimum standard of design and to encourage new construction to incorporate design quality into projects. The guidelines provide a general framework for review and evaluation of design proposals, implement applicable General Plan goals and policies, and assist in expediting and facilitating the permit planning process. The guidelines contain policies that attempt to maintain the rural character of the county even in urban areas. These guidelines are used by the County in reviewing and approving discretionary development projects. In particular, they are used by the County in prescribing design measures and construction techniques on steep slopes to minimize erosion.

### ***Resource Conservation Districts***

Resource Conservation Districts (RCDs) were created to address erosion issues. RCDs are independent special districts organized under Public Resources Code (PRC) Division 9. They work closely with the Natural Resource Conservation Service (NRCS) in acting as a liaison between the federal government and landowners. In addition to soil erosion, RCDs address other conservation issues such as forest fuel management, water and air quality, and wildlife habitat restoration.

Three RCDs serve El Dorado County: (1) El Dorado County RCD; (2) Georgetown Divide RCD; and (3) Tahoe RCD. These RCDs are responsible for reviewing and providing recommendations on Erosion Control Plans submitted as part of subdivision applications and other discretionary projects.

### **Mineral Resource Management and Regulations**

#### ***California Surface Mining and Reclamation Act of 1975 and State Mining and Geology Board Regulations***

Surface mines are regulated by the state of California by the Surface Mining and Reclamation Act (SMARA), PRC § 2710 et seq., and through the County's land use permitting process. The intent of SMARA is to protect identified mineral resources, recognizing that the extraction of mineral resources is essential for the economic well-being of the state and to prevent or minimize adverse environmental impacts by ensuring that mined lands are reclaimed to a safe and useable condition. Mining operations are regulated through the County's permitting process. Unless a mine operates as a vested operation (having been initiated before the County requirement to obtain a permit to operate), a special-use permit must be obtained

before mining operation begin. SMARA encourages consideration of values relating to recreation, watershed, wildlife, range and forage, and aesthetics in the production and conservation of minerals [§2712(b)]; and requires elimination of hazards to the public health and safety [§2712(c)].

SMARA §2770(a) prohibits surface mining operations unless a permit to operate, a reclamation plan, and financial assurances for reclamation have been approved by the lead agency. Typically, the lead agency under SMARA is the city or county within which the mining operation is located, however, the State Mining and Geology Board (SMGB) assumed “lead agency” status from the County on June 14, 2001, pursuant to SMARA §2774.4. The assumption of SMARA powers does not include the County’s authority to review and revise, issue, enforce, and revoke mining permits; the SMGB retains the authority to review and approve reclamation plans, review and approve financial assurances, conduct annual mine inspections, and enforce compliance with SMARA.

CCR Title 14, Division 2, Chapter 8, Subchapter 1 implements portions of SMARA, particularly in relation to reclamation plans, mineral resource management, and financial assurances. CCR §3502(b) specifies required components of the reclamation plan beyond PRC §2772. Section 3503 defines the minimum acceptable practices to be followed in surface mining operations related to erosion control, water quality and watershed control, protection of fish and wildlife habitat, disposal of mine waste rock and overburden, erosion and drainage, resoiling, and revegetation. Sections 3504(b) and 3702 both require that financial assurances be provided by mining/reclamation proponents to ensure that reclamation is “... performed in accordance with the approved reclamation plan ...” Sections 3703–3713 provide performance standards for wildlife habitat; backfilling, regrading, slope stability, and recontouring; revegetation; drainage, diversion structures, waterways, and erosion control; prime agricultural land reclamation; other agricultural land; building structure, and equipment removal; stream protection, including surface and groundwater; topsoil salvage, maintenance, and redistribution; tailing and mine waste management; and closure of surface openings. Sections 3800–3806.2 specify the process and types of financial assurances that must be provided for reclamation.

CCR §3675 defines land uses that are compatible and incompatible with mining areas. Land uses that are “... inherently compatible with mining and/or that require a minimum public or private investment in structures, land improvements, and which may allow mining because of the relative economic value of the land and its improvements” are considered compatible with mining. Examples of compatible land uses include very low-density residential, recreational, agricultural, and grazing uses.

Incompatible land uses "... are inherently incompatible with mining and/or require public or private investment in structures, land improvements, and landscaping and that may prevent mining because of the greater economic value of the land and its improvements..." such as high-density residential, public facilities, and other uses.

CCR §3676 specifies the content of mineral resource policies adopted by lead agencies pursuant to PRC §2762. Specifically, lead agencies' mineral resource policies must contain at least the following:

- < a summary of mineral resource information in relation to state policies;
- < statements of policy in accordance with any state-classified mineral resource area; and
- < implementation measures that identify mineral deposit areas and areas targeted for conservation and possible future extraction, and General Plan policies related to those areas.

### ***Federal Management of Mineral Resources***

Federal law allows the USFS, through the El Dorado National Forest Land Use and Resource Management Plan, to impose conditions on mineral rights leases (U.S. Forest Service 1988). The USFS has the responsibility to protect all surface resources on National Forest land.

### ***El Dorado County Homeowners Protective Initiative (Measure A)***

Approval of new permits for surface mining operations are further regulated by §17.14.095 of the County Ordinance. This section of the ordinance, established as a result of the passage of Measure A in 1984, requires a special-use permit for open-pit or strip mining activities that require the removal of over 1,000 cubic yards of overburden. With some limited exceptions, Measure A prohibits new open-pit or strip mines within 10,000 feet of any existing residence, hospital, church, or school. The stated purpose of this requirement is to minimize land use conflicts between rural and rural-residential uses and mining operations. This buffer zone is also intended to preserve the rural-residential and residential character of El Dorado County and limit adverse environmental and public health/safety impacts.

## 5.9.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

### THRESHOLDS OF SIGNIFICANCE

The General Plan would result in a significant impact if development would:

- < expose people or structures to potential substantial seismic risks, including the risk of loss, injury, or death involving: (a) rupture of a known earthquake fault; (b) strong seismic groundshaking; (c) seismic-related ground failure (e.g., liquefaction); and/or (d) seismically induced landslides;
- < result in substantial soil erosion or the loss of topsoil;
- < direct growth toward geologic units or soils that are unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse;
- < occur on expansive soils, as defined in the Uniform Building Code, creating substantial risks to property;
- < 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; or
- < result in land use conflicts between mining operations and other land uses.

Impact  
5.9-1

**Increased Development in Areas Potentially Subject to Seismic Hazards.** The proposed General Plan is designed to accommodate future population and job growth, thereby exposing future residents and workers to potential seismic events. However, the probability of major seismic events in the county is low, and therefore, the potential for public expose to seismic hazards is minimal. The only potentially active fault in the county is located predominantly in the Coloma/Gold Hill Market Area. Based on projected development in proximity to this fault through 2025 the severity of this impact would be greater under the Roadway Constrained 6-Lane “Plus” and 1996 General Plan Alternatives, followed by the No Project and Environmentally Constrained Alternatives. However, because all new development would be required to abide by County building standards, which incorporate standard seismic safety provisions, this impact is considered **less than significant**. Impact significance is shown in the table below.

Impact	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.9-1: Increased Development in Areas Potentially Subject to Seismic Hazards	LS	LS	LS	LS	LS	LS	LS	LS
Mitigation	Significance After Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
N/A	LS	LS	LS	LS	LS	LS	LS	LS
* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.								

Seismic events and related hazards could result in injury, loss of life, and/or property damage as a result of failure of structural and nonstructural building components. Other public hazards may include disruption of utility service resulting in unsanitary or unhealthful conditions, fires/explosions from damaged natural gas lines, and delay in emergency response services. However, based on the characteristics of the fault system in El Dorado County, the potential for significant seismic activity to occur in the county over the planning horizon is limited. No active faults have been identified under the Alquist-Priolo mapping program, and further, there have been no recorded cases of seismic fault rupture in the county. There is only one potentially active fault segment identified in the county; it is part of the Rescue Lineament-Bear Mountains fault zone, located predominantly in the Coloma/Gold Hill Market Area (see Exhibit 5.9-2). Please refer to Table 4-5 in Chapter 4, Land Use Forecasts, for projected residential development through 2025 and buildout for the four equal-weight alternatives in this market area.

Nevertheless, there exists the potential for significant seismic events to occur within the county based on the quantity and distribution of faults within the county and the uncertain nature of seismic events, although the probability of such events occurring is low. The extent and magnitude of potential seismic events are unknown, although it is more likely that such events would occur near known active and/or potentially active faults in the region. The primary hazards associated with seismic events would be earthquake-induced fault rupture and ground shaking. The potential for fault rupture is negligible because there are no designated Alquist-

Priolo Fault Zones in the county, which identify areas subject to fault rupture. The county may be subject to periodic seismic ground shaking events, but the potential magnitude of such events is low to moderate throughout the county, and generally increases from west to east. All new development would be subject to current UBC requirements, which would minimize the risk of structural failure of new buildings. There exists the potential for the structural failure of older, non-seismically retrofitted buildings during seismic events. However, the number of unreinforced masonry structures under the County's jurisdiction is low, and are handled through the Uniform Code for the Abatement of Dangerous Buildings (part of the County Building Code) on a case-by-case basis.

Related secondary effects of seismic activity include liquefaction, lateral spreading, seismically induced landslides, or other ground failure. There are no Seismic Hazard Zones within El Dorado County as defined by the Seismic Hazards Mapping Program administered by the CGS. Therefore, the potential for these secondary seismic effects is minimal.

### **No Project Alternative (Alternative #1)**

#### ***Relevant Goals/Policies—No Project Alternative***

The relevant policies included in the 1996 General Plan that are applicable to the No Project alternative are Policies 6.3.2.1 and 6.3.2.4.

#### ***No Project Alternative (2025)—Impact Discussion***

Although seismic risks are low, development under the No Project Alternative would result in increased numbers of people who could potentially be exposed to seismic events and associated seismic hazards through 2025. Under this alternative, an additional 21,434 dwelling units are expected to develop, which equates to an estimated population increase of 53,610 residents; this represents the lowest overall growth rate among the four equal-weight alternatives. The majority of new growth, approximately 61%, is expected to occur in the El Dorado Hills Market Area, which does not contain active/potentially active faults. Growth in proximity to the only potentially active fault in the county is low, with up to 455 new housing units expected in the Coloma/Gold Hill Market Area; this represents only 2.1% of projected countywide residential growth through 2025.

Consideration of seismic hazards under the No Project Alternative is reflected in General Plan Policies 6.3.2.1 and 6.3.2.4. These policies stipulate that the County would maintain seismic maps and adopt the latest seismic-related provisions of the UBC. Implementation of these policies, in conjunction with the County Building Code which requires all new developments

to be constructed in accordance with the UBC, would minimize the potential for public injury and property damage associated with seismic events. As a result, this impact is considered less than significant.

### ***No Project Alternative (Buildout)—Impact Discussion***

Under the No Project Alternative, continuing residential growth through buildout would result in a higher number of new structures and residents that could potentially be exposed to seismic events. Therefore, seismic impacts could potentially be more severe at buildout than under 2025 conditions. Approximately 29,520 new dwelling units are projected to be developed at buildout, which could accommodate a population increase of 73,829 people, an increase in residential growth of approximately 37% over to 2025 conditions. The majority of new growth would occur in the western portion of the county, similar to 2025 conditions, but at buildout there would be increased development in eastern El Dorado County, where there is the potential for higher magnitude seismic events. At buildout, more development, roughly 694 dwelling units, is projected in proximity to the county's only potentially active fault located in the Coloma/Gold Hill Market Area.

Similar to 2025, Policies 6.3.2.1 and 6.3.2.4, in conjunction with the County Building Code, would minimize the potential for seismically induced personal injury and property damage. This impact is considered less than significant.

### **Roadway Constrained 6-Lane “Plus” Alternative (Alternative #2)**

#### ***Relevant Goals/Policies—Roadway Constrained 6-Lane “Plus” Alternative***

The relevant policies that are applicable to the Roadway Constrained 6-Lane “Plus” Alternative are Policies HS-1c, and HS-4a and HS-4b.

#### ***Roadway Constrained 6-Lane “Plus” Alternative (2025)—Impact Discussion***

Like the No Project Alternative, the Roadway Constrained 6-Lane “Plus” Alternative would result in new residential growth, which would expose more people to potential seismic hazards, please refer to No Project Alternative (2025)—Impact Discussion above. Development would be slightly higher with approximately 25,839 new dwelling units projected through 2025, providing housing to 64,601 new residents. Similar to No Project, subdivision is limited, which could promote increased development in the eastern portion of the county. Given the projected distribution of development under this alternative by 2025,

there would be an increase of up to 640 dwelling units in the market area (Coloma/Gold Hill) potentially most affected by fault activity.

Consideration of seismic hazards under the Roadway Constrained 6-Lane “Plus” Alternative is reflected in General Plan Policies HS-1c, and HS-4a and HS-4b. These policies state that the County will site new public facilities with consideration of seismic conditions, review projects for seismic hazards (i.e., liquefaction), and maintain seismic hazard maps. In addition, the County Building Code, which includes the provisions of the UBC, would continue to be implemented; therefore, the potential for public injury and property damage associated with seismic events would be minimal. Potential impacts associated with non-seismically retrofitted structures would be addressed through the Uniform Code for the Abatement of Dangerous Buildings. This impact is considered less than significant.

#### ***Roadway Constrained 6-Lane “Plus” Alternative (Buildout)—Impact Discussion***

At buildout, continuing residential growth could expose relatively higher amounts of new residents to potential seismic hazards. Therefore, potential impacts could be more severe at buildout than under 2025 conditions. In total, 41,652 dwelling units and 104,137 new residents could be accommodated under this alternative, a 65% increase over 2025 conditions. Approximately 1,053 dwelling units could be developed in proximity to the county’s only potentially active fault.

Based on General Plan Policies HS-1c, HS-4a, and HS-4b and continued implementation of the UBC, the potential for public injury and property damage associated with seismic events would be minimal. This impact is considered less than significant.

#### **Environmentally Constrained Alternative (Alternative #3)**

##### ***Relevant Goals/Policies—Environmentally Constrained Alternative***

For the relevant policies of the Environmentally Constrained Alternative, please refer to the policies listed above under Relevant Goals/Policies—Roadway Constrained 6-Lane “Plus” Alternative.

##### ***Environmentally Constrained Alternative (2025)—Impact Discussion***

Similar to the No Project Alternative, new residential growth under the Environmentally Constrained Alternative would expose new residents to potential seismic hazards, please refer to No Project Alternative (2025)—Impact Discussion above. Under this alternative, residential

growth would be higher with approximately 32,290 new dwelling units and 80,730 new residents projected through 2025. Roughly 447 new dwelling units would be developed in proximity to the only potentially active fault in the County.

Seismicity-related policies associated with the Environmentally Constrained Alternative are the same as those developed for the Roadway Constrained 6-Lane “Plus” Alternative described above (see Policies HS-1c, HS-4a, and HS-4b). Similarly, the County would continue to implement the County Building Code, which contains the provisions of the UBC. Together, County policy and the County Building Code would limit public injury and property damage associated with new development in the case of potential seismic events and would address potential impacts associated with non-seismically retrofitted structures. This impact is considered less than significant.

#### ***Environmentally Constrained Alternative (Buildout)—Impact Discussion***

Under the Environmentally Constrained Alternative, continuing residential growth through buildout could potentially expose additional residents to seismic hazards. This alternative could accommodate a total of 55,078 new dwelling units and 137,688 new residents. A total of 720 dwelling units could be developed in proximity to the only potentially active fault in the county.

Based on General Plan Policies HS-1c, HS-4a, and HS-4b and continued implementation of the County Building Code, the potential for public injury and property damage associated with potential seismic events would be minimal. This impact is considered less than significant.

#### **1996 General Plan Alternative (Alternative #4)**

##### ***Relevant Goals/Policies—1996 General Plan Alternative***

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under Relevant Goals/Policies—No Project Alternative.

##### ***1996 General Plan Alternative (2025)—Impact Discussion***

This alternative would result in impacts similar to those described for No Project Alternative; please refer to the No Project Alternative (2025)—Impact Discussion above. However, the 1996 General Plan Alternative is projected to result in the development of 32,491 new dwelling units and an increase in population of 81,241 people through the planning horizon (2025), which represents the most intense countywide development pattern among the four equal-

weight alternatives. Therefore, this alternative would potentially expose the most development and people to potential seismic hazards. It would also result in growth in proximity to the only potentially active fault in the County—approximately 613 new dwelling units through 2025.

Under the 1996 General Plan Alternative, the same policies would be implemented as in the No Project Alternative (Policies 6.3.2.1 and 6.3.2.4). In addition, the County would continue to implement the UBC as part of the County Building Code. This impact is considered less than significant.

### ***1996 General Plan Alternative (Buildout)—Impact Discussion***

The 1996 General Plan Alternative would result in the highest levels of residential growth at buildout, potentially adding a total of 32,491 new dwelling units and 196,692 new residents to the county that could be exposed to potential seismic hazards. This alternative would also result in residential development in proximity to the only potentially active fault in the county through buildout, roughly 1,454 new dwelling units in the Coloma/Gold Hill Market Area.

Based on General Plan Policies 6.3.2.1 and 6.3.2.4, and continued implementation of the UBC, the potential for public injury and property damage associated with potential seismic events would be minimal under this alternative. This impact is considered less than significant.



#### **Increased Development in Areas Susceptible to Landslide and Avalanche**

**Hazards.** All four equal-weight alternatives could potentially allow development to occur in areas susceptible to landslide and avalanche hazards. Landslide and avalanche hazard areas in the county have not been formally mapped, but can be inferred based on past occurrences and site topography and other climate characteristics. Landslides and avalanches are more likely to occur in the eastern portions of the county, generally corresponding to the American River Market Area. Therefore, relative differences among alternatives in terms of exposure to landslide and avalanche hazards are based on patterns specific to market areas. Based on projected residential development in the American River Market Area through 2025, potential landslide and avalanche impacts would be minimal. The potential for greatest impacts would occur under the Environmentally Constrained Alternative. The other three equal-weight alternatives would pose less risk of exposure and are roughly comparable to each other. Through buildout, where significant development could occur in eastern El Dorado County, the severity of this impact would be greatest under the 1996 General Plan Alternative, followed by the Roadway Constrained

6-Lane “Plus,” Environmentally Constrained, and No Project alternatives. Discretionary development would be subject to site review and would be required to prepare a geotechnical study that would identify potential geologic hazards and would condition approval on addressing these hazards into site design, if feasible. However, nondiscretionary development would also be allowed to develop in areas subject to geologic hazards without sufficient county review or the preparation of a geotechnical study. Therefore, future residents could be exposed to landslide and avalanche hazards. This impact is considered **significant**. Impact significance before and after mitigation is shown in the table below.

Impact	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane “Plus”)		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.9-2: Increased Development in Areas Susceptible to Landslide and Avalanche Hazards	S <sub>2</sub>	S <sub>4</sub>	S <sub>2</sub>	S <sub>2</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>1</sub>	S <sub>1</sub>
Mitigation	Significance After Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane “Plus”)		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.9-2(a), Implement Mitigation Measure 5.1-3(a) and 5.9-2(b), Require Geologic Analysis in Areas Prone to Geological or Seismic Hazards	LS	LS	LS (5.9-2(a) only)	LS (5.9-2(a) only)	LS (5.9-2(a) only)	LS (5.9-2(a) only)	LS	LS
* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.								

Factors affecting landslide potential include, but are not limited to, geologic conditions, drainage characteristics, slope gradient and configuration, vegetation, and removal of underlying support. Cuts and fills associated with road building activity are a major cause of slope instability. These same factors, in addition to snowfall levels and slope aspect, also influence the probability of avalanches. There are no current mapping programs that identify areas susceptible to landslides and avalanches. However, based on the topography, soil characteristics, and historical experience within El Dorado County, certain areas are

considered more susceptible to landslide and avalanche hazards. For example, future landslides have a higher probability of occurring in areas where landsliding has already taken place (e.g., U.S. 50 corridor between Placerville and Echo Summit), areas subject to road infrastructure expansion which would require cuts and fills, and/or areas with steep slopes. Avalanches are more likely to occur at elevations above 5,000 feet where significant snowfall is expected to occur and in areas that are subject to human activities (e.g., ski facilities). These characteristics, which are conducive to landslide and avalanche hazards, are most prevalent in, but not restricted to, the American River and Lake Tahoe Basin market areas, where limited development is expected to occur. For the purposes of this analysis, potential avalanche and landslide hazards are based on development in the American River market area. Please refer to Table 4-5 in Chapter 4, Land Use Forecasts, for projected residential development through 2025 and buildout for the four equal-weight alternatives in the American River Market Area.

### **No Project Alternative (Alternative #1)**

#### ***Relevant Goals/Policies—No Project Alternative***

The relevant policies included in the 1996 General Plan that are applicable to the No Project alternative are Policies 6.3.2.1, 6.3.2.3, and 7.1.2.1.

#### ***No Project Alternative (2025)—Impact Discussion***

Under the No Project Alternative, a limited number of new dwelling units (approximately 239) are projected to be developed in the American River Market Area, some portion of which could potentially be exposed to landslide and avalanche hazards.

General Plan Policies 6.3.2.1 and 6.3.2.3 address the need to identify areas subject to avalanche hazards and mandates the development of an avalanche overlay zone, which requires all new residential structures developed in avalanche zones be designed to withstand avalanche hazards. If implemented, design and construction requirements could minimize potential avalanche hazards. Such requirements are in place and have been implemented in Placer County (Breuch, pers. comm., 2003); please refer to Existing Conditions above for more information on avalanche programs in Placer County. However, although physically feasible, it may not be economically viable to design structures to withstand avalanche events (Carey, pers. comm., 2003).

General Plan policies do not specifically address landslide hazards. Policy 7.1.2.1 would discourage discretionary development on slopes greater than 40% and require site-specific review on slopes greater than 30%. Discretionary development in the county requires a site

specific review based on the Design and Improvement Standards Manual. The Design and Improvement Standards Manual requires a Land Capability Report for subdivision projects that must address earth movement unrelated to seismicity, which includes landslides and avalanches. Further, a geotechnical study is required for all discretionary projects. However, nondiscretionary projects could potentially be developed on steep slopes and/or in potential avalanche hazard areas, and may not require a geotechnical evaluation. Because most development permitted under the No Project Alternative is nondiscretionary outside the approved DAs, and nondiscretionary development could occur in areas prone to landslides and avalanches, this impact is considered significant.

### ***No Project Alternative (Buildout)—Impact Discussion***

At buildout, landslide- and avalanche-related impacts could potentially be more severe than under 2025 conditions because additional development could occur in areas subject to landslide and avalanche hazards. Much of this additional development (beyond 2025) would occur in the eastern portion of the county, where slopes are relatively steeper and avalanche potential is higher. Roughly 1,499 new dwelling units could be developed in the American River Market Area, which has the highest potential for landslide and avalanche hazards in the county.

As described in the 2025 scenario, the proposed General Plan policies and County Building Code would not fully address potential landslide and avalanche impacts. Therefore, this impact is considered significant.

### **Roadway Constrained 6-Lane “Plus” Alternative (Alternative #2)**

#### ***Relevant Goals/Policies—Roadway Constrained 6-Lane “Plus” Alternative***

The relevant policies that are applicable to the Roadway Constrained 6-Lane “Plus” Alternative are Policies HS-1c, HS-4a, and HS-4b, and CO-1d.

#### ***Roadway Constrained 6-Lane “Plus” Alternative (2025)—Impact Discussion***

Like the No Project Alternative, the Roadway Constrained 6-Lane “Plus” Alternative could allow development in areas susceptible to landslide and avalanche hazards; please refer to No Project Alternative (2025)—Impact Discussion above. Development in areas prone to landslide and avalanche hazards would be minimal through 2025, with approximately 243 dwelling units projected to be developed in the American River Market Area.

General Plan Policies HS-1c, HS-4a, and HS-4b, and CO-1d include provisions for siting emergency response facilities to minimize exposure to geologic effects and avalanches, maintaining geologic and avalanche hazard maps, requiring geotechnical studies on projects subject to landslide and avalanche hazards, and generally prohibiting development on slopes greater than 30%. Policy CO-1d is more protective than the policies for the No Project/1996 General Plan Alternatives in addressing development on steep slopes because development of slopes greater than 30% is prohibited. Policy HS-4b, in conjunction with the County Building Code, addresses landslide and avalanche hazards on discretionary development projects by requiring a geotechnical study in areas susceptible to geologic hazards. However, this alternative would still allow new nondiscretionary development (e.g., single-family residences) in areas susceptible to landslide and avalanche hazards. This impact is considered significant.

### ***Roadway Constrained 6-Lane “Plus” Alternative (Buildout)—Impact Discussion***

Landslide- and avalanche-related impacts could potentially be more severe through buildout than under 2025 conditions because higher levels of development could occur in areas subject to the landslide and avalanche hazards. Substantially higher levels of growth are expected in the eastern county, which has relatively larger land areas with steep slopes and higher avalanche potential. Approximately 2,671 new dwelling units could be developed in the American River Market Area, which has the highest potential for avalanche and landslide hazards in the county.

Similar to the 2025 scenario described above, the proposed policies and the County Building Code would not fully mitigate impacts associated with potential nondiscretionary development in areas subject to landslides and avalanches. Therefore, this impact is considered significant.

### **Environmentally Constrained Alternative (Alternative #3)**

#### ***Relevant Goals/Policies—Environmentally Constrained Alternative***

The relevant policies that are applicable to the Environmentally Constrained Alternative are Policies HS-1c, HS-4a, HS-4b, CO-1d (Policy CO-1d for this alternative differs from the policy for the Roadway Constrained 6-Lane “Plus” Alternative because it applies only to areas outside important Biological Corridor overlay areas), and CO-1e.

#### ***Environmentally Constrained Alternative (2025)—Impact Discussion***

Unlike the No Project Alternative, the Environmentally Constrained Alternative focuses on more compact subdivision development in community regions and rural centers, however,

development in areas that may be susceptible to landslide and avalanche hazards could still occur. Development in areas prone to landslide and avalanche hazards would be limited through 2025, with approximately 355 new dwelling units projected to be developed in the American River Market Area.

General Plan Policies HS-1c, HS-4a, HS-4b, CO-1d, and CO-1e and the County Building Code would not fully mitigate impacts associated with landslides and avalanches because they would potentially still allow new nondiscretionary development in landslide- and avalanche-prone areas. Policy CO-1e also allows for an exception to development restrictions on steep slopes within the Important Biological Corridor overlay, which may result in discretionary development in areas subject to landslide and avalanche hazards. This impact is considered significant.

#### ***Environmentally Constrained Alternative (Buildout)—Impact Discussion***

At buildout, the Environmentally Constrained Alternative could allow additional development in areas susceptible to landslide and avalanche hazards; therefore, impacts at buildout would be more severe than under 2025 conditions. Substantially higher levels of growth are expected in the eastern market areas characterized by steep slopes and higher avalanche potential. Roughly 2,394 new dwelling units could be developed in the American River Market Area, which has the highest potential for landslide and avalanche hazards in the county.

Similar to the 2025 scenario described above, the proposed policies and the County Building Code would not fully mitigate impacts associated with potential development in areas subject to landslides and avalanches. Therefore, this impact is considered significant.

#### **1996 General Plan Alternative (Alternative #4)**

##### ***Relevant Goals/Policies—1996 General Plan Alternative***

For the relevant policies of the 1996 General Plan alternative, please refer to the policies listed above under Relevant Goals/Policies—No Project Alternative.

##### ***1996 General Plan Alternative (2025)—Impact Discussion***

Under the 1996 General Plan Alternative, development would be allowed in areas that may be susceptible to landslide and avalanche hazards. Development in areas subject to landslide and avalanche hazards would be minimal through 2025, with roughly 229 new dwellings unit

projected to be developed in the American River Market Area. Although this is the lowest amount of development in the American River market area of the four equal-weight alternatives, there is a higher potential for development on steep slopes relative to the two constrained alternatives based on policies that allow development on steeper slopes.

The same policies and the County Building Code for the No Project Alternative are applicable to the 1996 General Plan Alternative. Please refer to the discussion of policies under No Project—Impact Discussion. However, because Policy 6.3.2.3 may be infeasible and nondiscretionary development could occur in areas prone to landslides and avalanches, this impact is considered significant.

***1996 General Plan Alternative (Buildout)—Impact Discussion***

Landslide- and avalanche-related impacts could be greater at buildout than under 2025 conditions, because more residential growth could be accommodated under this scenario. At buildout, this alternative could result in the highest level of development in proximity to landslide and avalanche hazards; approximately 3,371 new dwelling units could be accommodated in the American River Market Area.

Similar to the 2025 scenario, the proposed policies and the County Building Code would not fully mitigate impacts associated with potential nondiscretionary development in areas subject to landslides and avalanches. This impact is considered significant.

**Mitigation Measure 5.9-2—No Project Alternative**

The County shall adopt both of the following measures:

- < Mitigation Measure 5.9-2(a): Implement Mitigation Measure 5.1-3(a)
- < Mitigation Measure 5.9-2(b): Require Geologic Analysis in Areas Prone to Geological or Seismic Hazards

These potential mitigation measures are described below.

***Mitigation Measure 5.9-2(a): Implement Mitigation Measure 5.1-3(a)***

The County shall implement Mitigation Measure 5.1-3(a) described in Section 5.1, Land Use and Housing.

**Mitigation Measure 5.9-2(b): *Require Geologic Analysis in Areas Prone to Geological Hazards***

The County shall adopt following supplemental policy:

**New Policy:** Applications for development of habitable structures shall be reviewed for potential hazards associated with steep or unstable slopes, areas susceptible to high erosion, and avalanche risk. Geotechnical studies shall be required when development may be subject to geological hazards. If hazards are identified, applicants shall be required to mitigate or avoid identified hazards as a condition of approval. If no mitigation is feasible, the project will not be approved.

These measures would subject all development, including ministerial projects (i.e., single-family residences), to review for potential geologic hazards, which include avalanche and landslide events. By subjecting all projects to review and requiring these projects to mitigate or avoid all hazards, potential avalanche and landslide hazards are minimized and reduced to a less-than-significant level.

**Mitigation Measure 5.9-2—Roadway Constrained 6-Lane “Plus” Alternative**

Please refer to Mitigation Measure 5.9-2(a) described under the No Project Alternative above. With implementation of this mitigation measure, impacts would be reduced to a less-than-significant level for the reasons described under the No Project Alternative.

**Mitigation Measure 5.9-2—Environmentally Constrained Alternative**

Please refer to the proposed mitigation measure for the Roadway Constrained 6-Lane “Plus” Alternative above. With implementation of this mitigation measure, impacts would be reduced to a less-than-significant level.

**Mitigation Measure 5.9-2—1996 General Plan Alternative**

Please refer to the proposed mitigation measures for the No Project Alternative above. With implementation of these mitigation measures, impacts would be reduced to a less-than-significant level.



**Increased Development on Expansive Soils.** Population growth under any of the four equal-weight alternatives would result in new development that could potentially occur on expansive soils. Based on countywide development projections, the severity of this impact would be potentially greatest under the

1996 General Plan Alternative, followed by the Environmentally Constrained, Roadway Constrained 6-Lane “Plus,” and No Project Alternatives. However, El Dorado County does not have substantial amounts of expansive soils. Further, all new development would be required to conform to County building standards, which are designed to address structural integrity of new structures. Projects that require a grading permit and are located in areas with expansive soils are also required to conduct a geotechnical study and incorporate any protective measures identified in such a study. This impact is considered **less than significant** for all alternatives. Impact significance is shown in the table below.

Impact	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane “Plus”)		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.9-3: Increased Development on Expansive Soils	LS	LS	LS	LS	LS	LS	LS	LS
Mitigation	Significance After Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane “Plus”)		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
N/A	LS	LS	LS	LS	LS	LS	LS	LS
* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.								

Soils in El Dorado County generally have a low shrink-swell potential, which relates directly to the presence of expansive soils. Approximately 11.7% of soils surveyed in the western portion of the county have moderate shrink-swell rating and less than 1% have a high shrink-swell rating; all other areas are either rated low or are rock formations that have no rating (SCS 1974). Areas with moderate shrink-swell potential are dispersed evenly throughout western El Dorado County. Building foundations, roads, and other structures could be damaged if located on expansive soils, especially if located in areas that cross soil unit boundaries with different expansiveness properties.

## **No Project Alternative (Alternative #1)**

### ***Relevant Goals/Policies—No Project Alternative***

No policies are applicable.

### ***No Project Alternative (2025)—Impact Discussion***

Development under the No Project Alternative would be concentrated in western El Dorado County in existing commitments; however, development would also extend throughout the eastern parts of the county because of Writ development restrictions. New development could potentially occur in areas with low to moderately expansive soils located throughout the county. This alternative would result in the lowest level of countywide residential development among the four equal-weight alternatives.

There are no policies included in the No Project Alternative that specifically address expansive soils. However, the County Building Code minimizes hazards related to construction on expansive soils. A soils/geotechnical study is required for all commercial projects and discretionary residential subdivision applications, as well as certain nondiscretionary projects (i.e., projects where fill material is placed onsite, a cut or fill exceeding 10 feet in depth, or projects that increase soil-bearing values). A soils/geotechnical report is also required as part of the grading permit application process when expansive soils are present. Recommendations identified in soils/geotechnical reports, including appropriate site and building design measures if expansive soils are present, will be incorporated in the final project plans and specifications (Sec. 15.14.030 of the Grading Ordinance).

Nondiscretionary residential projects (e.g., single-family residences) that are exempt from the grading permit process could potentially be developed in areas containing expansive soils. Because new subdivisions beyond those contained in existing DAs are prohibited by the Writ, most new development under the No Project Alternative will be ministerial. However, nondiscretionary projects would still need to conform to current UBC requirements, which are intended to protect the structural integrity of all new structures. Further, the County Building Department generally reviews building permit applications for geologic hazards during the permit review and site inspection process. These safeguards, in addition to the fact that the amount of highly expansive soils in the county is limited (less than 1% in western El Dorado County), minimize the potential for impacts associated with expansive soils. Therefore, this impact is considered less than significant.

### ***No Project Alternative (Buildout)—Impact Discussion***

Impacts at buildout would be similar to, yet potentially more severe than, those at 2025; please refer to No Project Alternative (2025)—Impact Discussion above. At buildout, approximately 38% more residential and 133% more nonresidential development could be accommodated than under 2025 conditions. Consequently, more structures could potentially be developed on moderately expansive soils than under 2025 conditions. However, based on the County Building Code described above, which requires soils reports and design measures for most development in areas prone to expansive soils and implementation of the UBC, and the fact that there are minimal amounts of highly expansive soils in the county, this impact is considered less than significant.

### **Roadway Constrained 6-Lane “Plus” Alternative (Alternative #2)**

#### ***Relevant Goals/Policies—Roadway Constrained 6-Lane “Plus” Alternative***

No policies are applicable.

#### ***Roadway Constrained 6-Lane “Plus” Alternative (2025)—Impact Discussion***

Impacts associated with development on expansive soils would be similar to the No Project Alternative; please refer to No Project Alternative (2025)—Impact Discussion above.

#### ***Roadway Constrained 6-Lane “Plus” Alternative (Buildout)—Impact Discussion***

Similar to the No Project Alternative, development patterns at buildout under this alternative would be more intense relative to 2025 conditions. Please refer to No Project Alternative (Buildout)—Impact Discussion above.

### **Environmentally Constrained Alternative (Alternative #3)**

#### ***Relevant Goals/Policies—Environmentally Constrained Alternative***

No policies are applicable.

#### ***Environmentally Constrained Alternative (2025)—Impact Discussion***

Impacts associated with development on expansive soils would be similar to the No Project Alternative; please refer to No Project Alternative (2025)—Impact Discussion above.

### *Environmentally Constrained Alternative (Buildout)—Impact Discussion*

Similar to the No Project Alternative, development patterns at buildout under this alternative would be more intense relative to 2025 conditions. Please refer to No Project Alternative (Buildout)—Impact Discussion above.

### **1996 General Plan Alternative (Alternative #4)**

#### *Relevant Goals/Policies—1996 General Plan Alternative*

No policies are applicable.

#### *1996 General Plan Alternative (2025)—Impact Discussion*

Impacts associated with development on expansive soils would be similar to No Project Alternative; please refer to No Project Alternative (2025)—Impact Discussion above.

#### *1996 General Plan Alternative (Buildout)—Impact Discussion*

Similar to the No Project Alternative, development patterns at buildout under this alternative would be more intense relative to 2025 conditions. Please refer to No Project Alternative (Buildout)—Impact Discussion above.

Impact  
5.9-4

**Additional Development Could Affect the Rate or Extent of Erosion.** Increases in erosion are often attributable to new construction and agricultural operations, which generally involve removal of vegetation and site grading. The erosion potential of soils in the county varies depending on location. Erosion hazards generally increase in areas with steep slopes. All four equal-weight alternatives would allow development on steep slopes, with the 1996 General Plan Alternative projected to result in the greatest amount of development in areas characterized by steep slopes. However, all nondiscretionary development and road improvement projects are subject to the County Grading Ordinance, which imposes restrictions on the time construction activity could occur and prescribes best management practices. Discretionary development would be subject to project review, including conformance with General Plan policy provisions and measures included in the Hillside Guidelines. Further, the Roadway Constrained 6-Lane “Plus” and Environmentally Constrained Alternatives contain policies that restrict development on steep slopes, which would limit erosion impacts. However,

many agricultural activities are not subject to the Grading Ordinance. As a result, there is the potential for increased erosion throughout the county. The Environmentally Constrained Alternative contains the greatest amount of land designated for agricultural uses. This impact is considered **significant**. Impact significance before and after mitigation is shown in the table below.

Impact	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.9-4: Additional Development Could Affect the Rate or Extent of Erosion	S <sub>2</sub>	S <sub>2</sub>	S <sub>2</sub>	S <sub>2</sub>	S <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>2</sub>
Mitigation	Significance After Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.9-4(a), Implement Mitigation Measure 5.1-3(a); 5.9-4(b), Restrict Development or Disturbance on Steep Slopes; and 5.9-4(c), Apply Erosion Control Measures to Agricultural Grading	LS	LS	LS	LS	LS	LS	LS	LS
* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.								

Erosion is generally correlated with various environmental and public safety concerns, including but not limited to unstable slopes, increased particulate matter in the air, increased sedimentation in water bodies, and the loss of productive agricultural topsoil. Further, slope instability could result in increased risk of injury or damage associated with mudslides, landslides, or other downslope movement of soil or rock. Construction activities such as excavation, grading, and cuts and fills generally expose loose rock and soil materials that are susceptible to wind and water forces, change the permeability or runoff characteristics of a project site, and modify or create new pathways for drainage. If slopes are not effectively contoured, compacted, or revegetated after construction, soils may be susceptible to erosion.

Agricultural grading activities may also result in erosion. When natural vegetation is removed for the purposes of establishing new agricultural operations (e.g., vineyards), the soil is loosened and becomes susceptible to water and wind erosion. Once established, agricultural operations expose the topsoil for extended periods of time, particularly during fallow periods. Erosion risks are especially high when the topsoil is exposed. The County Grading Ordinance partially addresses agricultural grading, but it is difficult to enforce because there are no real mechanisms to ensure that agricultural operations acquire a grading permit, which would require erosion protection measures.

Because erosion is commonly accelerated by building and road construction activities, it is assumed that increased rates of development, particularly in areas with high erosion potential, have the potential to result in increased erosion. Soils most susceptible to erosion are characterized by steep slopes, including river/streambanks, particularly when exposed on embankment faces and outcrops. Because slope is a critical factor in determining erosion potential, erosion impacts associated with new construction are based primarily on the amount of projected development in those market areas that contain steep slopes; for the purposes of this analysis, the threshold for critical slopes is 25%. Critical slopes are prevalent throughout the entire county, with more than 53% of the county's land area having slopes of more than 25%. Further, six market areas contain critical slopes on more than half of their land area: Pollock Pines (62.3%), Lake Tahoe Basin (62.1%), Mosquito (60.9%), American River (57.8%), Georgetown/Garden Valley (56.7%), and Pleasant Valley (54.2%) (see Table 5.9-3).

### **No Project Alternative (Alternative #1)**

#### ***Relevant Goals/Policies—No Project Alternative***

The relevant policies included in the 1996 General Plan that are applicable to the No Project Alternative are Policies 7.1.2.1 through 7.1.2.4 and 7.1.2.6.

#### ***No Project Alternative (2025)—Impact Discussion***

Under the No Project Alternative, approximately 1,735 new dwelling units, or 8.1% of projected development, are projected to be developed in the five market areas with predominantly steep slopes through the planning horizon (2025). The development of the units and associated access roads could potentially result in increased erosion.

No Project Policies 7.1.2.1 through 7.1.2.4 and 7.1.2.6 address erosion issues by discouraging development of steep slopes; requiring discretionary projects to implement best management practices; implementing the County Grading Ordinance; requiring coordination with local

RCDs; and encouraging the development of updated soil data. The County Building Code requires that all new discretionary and ministerial development implement specific erosion and sediment control measures, which vary by season, to minimize erosion associated with site development. In addition, the County review process for subdivision projects requires the implementation of an erosion control plan approved by the appropriate RCD, as well as conformance with the County Design and Improvements Standards Manual. The County also implements the Hillside Guidelines, which prescribes best management practices and slope stabilization measures for discretionary development projects on steep slopes. General Plan policies in conjunction with the County Building Code, including the County Grading Ordinance, identify design measures and construction techniques that substantially reduce the risk for erosion for new construction activities.

Because the Writ prohibits any new subdivisions except those already specified in existing DAs, many of these policies that are enforced through the subdivision process would not apply to 6,869 new dwelling units expected to be developed on existing parcels. Individual access roads would be constructed to serve these units and many would be unpaved because of expense, thus potentially resulting in erosion effects. However, the development and maintenance of access roads would still be subject to the Grading Ordinance, thereby minimizing erosion impacts.

Further, there are no proposed policies that address potential erosion impacts associated specifically with agricultural grading activities. Approximately 49,460 acres would be in designated Agricultural Districts under this alternative. Agricultural grading is generally exempt from the County Grading Ordinance unless such grading creates a cut or fill that could endanger any structure or public road or cause sediment in any watercourse or drainage conduit. As described above, however, even if agricultural operations could result in these types of erosion impacts, they rarely acquire grading permits and implement protective measures. Because agricultural grading is generally unregulated, future agricultural development could result in erosion impacts.

In summary, because discretionary and ministerial development could still occur on steep slopes, the primary factor influencing the rate and extent of erosion, and because agricultural grading activities are generally exempt from the grading permit process, this impact is considered significant.

#### ***No Project Alternative (Buildout)—Impact Discussion***

At buildout, the No Project Alternative could potentially result in 38% more residential growth (29,520 new dwelling units total) and 133% more nonresidential development (84,360 new jobs

total) than under 2025 conditions. Growth that occurs beyond the 2025 planning horizon would be concentrated in the eastern portions of the county where steep slopes are more prevalent. At buildout, up to 6,246 dwelling units could develop in the five market areas with predominantly steep slopes. Erosion impacts associated with agricultural grading activities would continue. Therefore, erosion impacts at buildout could be more severe than under 2025 conditions. This impact is considered significant.

### **Roadway Constrained 6-Lane “Plus” Alternative (Alternative #2)**

#### ***Relevant Goals/Policies—Roadway Constrained 6-Lane “Plus” Alternative***

The relevant policies applicable to the Roadway Constrained 6-Lane “Plus” Alternative are Policies CO-1b, CO-1c, CO-1d, and CO-12a.

#### ***Roadway Constrained 6-Lane “Plus” Alternative (2025)—Impact Discussion***

The Roadway Constrained 6-Lane “Plus” Alternative would result in types of impacts similar to those described for the No Project Alternative; please refer to No Project Alternative (2025)—Impact Discussion above. However, this alternative is projected to result in higher residential and nonresidential development through the planning horizon (2025), which could lead to increases in the extent and rate of erosion throughout the county. Under this alternative, a total of 25,839 new dwelling units and 86,688 jobs are projected to be developed countywide. Further, this alternative is expected to result in the development of 2,087 dwelling units in the five market areas that have predominantly steep slopes; this is equal to 8.1% of projected countywide residential development.

This alternative assumes that existing parcels can only be subdivided into a maximum of four parcels. Subdivisions would be subject to discretionary review; therefore, policies that are enforced through the discretionary review process would apply. Some 11,274 new units, outside existing residential commitments, are expected to develop through 2025. Individual access roads would be constructed to serve these units and many would not be paved because of expense. The development and maintenance of access roads would be subject to the Grading Ordinance.

Policies CO-1b, CO-1c, CO-1d, and CO-12a in the Roadway Constrained 6-Lane “Plus” Alternative contain measures to address erosion impacts. These policies provide for site design measures to minimize erosion, discourage grading during the rainy season, generally prohibit development on slopes greater than 30%, and seek the retention of native vegetation in undisturbed areas. These policies are generally more protective than the policies for the No

Project and 1996 General Plan Alternatives in that they substantially restrict development on steep slopes (see Policy CO-1d). However, nondiscretionary development is not subject to General Plan policies, and therefore, could be developed on steep slopes, which could result in increased erosion; it would, however, be subject to protective measures in the County Grading Ordinance. In addition, agricultural grading would continue to be minimally regulated on approximately 49,771 acres of land in Agricultural Districts, which could result in increased erosion. Therefore, this impact is considered significant.

### ***Roadway Constrained 6-Lane “Plus” Alternative (Buildout)—Impact Discussion***

At buildout, the Roadway Constrained 6-Lane “Plus” Alternative could result in more severe erosion impacts than under 2025 conditions as a result of higher development levels. This alternative could accommodate a total of 41,652 dwelling units and 86,688 jobs; this represents 61% more residential development and 152% more nonresidential development than under 2025 conditions. This additional growth would be concentrated in the eastern reaches of the county. Up to 11,143 dwelling units could develop in the five market areas with predominantly steep slopes. Because nondiscretionary development could occur on steep slopes and erosion impacts associated with agricultural grading activities would continue, this impact is considered significant.

### **Environmentally Constrained Alternative (Alternative #3)**

#### ***Relevant Goals/Policies—Environmentally Constrained Alternative***

The relevant policies that are applicable to the Environmentally Constrained Alternative are Policies CO-1b, CO-1c, CO-1d, and CO-12a. In addition, Policy CO-1e is applicable to this alternative.

#### ***Environmentally Constrained Alternative (2025)—Impact Discussion***

The Environmentally Constrained Alternative allows residential subdivision and places higher densities in compact community regions and rural centers. Subdivisions are typically served by well designed and regulated central circulation systems that are paved. This alternative is expected to result in the development of 32,290 dwelling units countywide and 2,415 dwelling units in the five market areas having predominantly steep slopes (7.5% of projected residential development).

Policies CO-1b, CO-1c, CO-1d, CO-1e, and CO-12a address erosion concerns. These policies are generally more protective in terms of soil erosion than those for the Roadway Constrained

6-Lane “Plus” Alternative. Specifically, Policy CO-1c precludes, as opposed to discouraging, grading activities during the rainy season, and Policy CO-1e is added, which generally prohibits disturbance of slopes greater than 30% in Important Biological Corridors (-IBC overlay). However, the County may lack enforcement mechanisms to ensure these policies would apply to ministerial projects. Erosion impacts associated with agricultural grading activities on 59,363 acres of designated Agricultural land would continue. This impact is considered significant.

#### ***Environmentally Constrained Alternative (Buildout)—Impact Discussion***

Because the Environmentally Constrained Alternative could accommodate approximately 71% more residential development and 59% more nonresidential development at buildout than under 2025 conditions, the potential for erosion impacts would be substantially higher at buildout than in 2025. Residential growth in the five market areas with predominantly steep slopes could be accommodated beyond the planning horizon; up to 9,530 dwelling units could develop in these five market areas. In addition to the County Building Code, policies are in place that would aim to minimize soil erosion. However, because nondiscretionary development could occur on steep slopes and erosion impacts associated with agricultural grading activities would continue, this impact is considered significant.

#### **1996 General Plan Alternative (Alternative #4)**

##### ***Relevant Goals/Policies—1996 General Plan Alternative***

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under Relevant Goals/Policies—No Project Alternative.

##### ***1996 General Plan Alternative (2025)—Impact Discussion***

Like the other equal-weight alternatives, the 1996 General Plan Alternative would potentially result in erosion impacts through 2025. Erosion impacts related to development are expected to be similar to those of the Environmentally Constrained Alternative based on countywide development projections through 2025 (32,491 new dwelling units and 42,196 new jobs), and the fact that there are no restrictions on subdivisions, which could result in potential erosion effects associated with access roads. Of this total, this alternative is expected to result in the development of 2,617 dwelling units in the five market areas with predominantly steep slopes (8.1% of projected residential development).

The policies addressing erosion in the 1996 General Plan are the same as those in the No Project Alternative (see Policies 7.1.2.1 through 7.1.2.4 and 7.1.2.6). These policies in conjunction with the County Building Code and the County Grading Ordinance, identify design measures and construction techniques that substantially reduce the risk for erosion. However, because there are no restrictions on development on extremely steep slopes, the primary factor influencing the rate and extent of erosion, and because erosion effects could result from agricultural grading on 49,460 acres of land in Agricultural Districts, this impact is considered significant.

### ***1996 General Plan Alternative (Buildout)—Impact Discussion***

The 1996 General Plan Alternative is expected to result in significantly higher rates of development at buildout than under 2025 conditions. Approximately 142% more residential and 105% more nonresidential development is projected beyond the planning horizon (2025). Therefore, potential erosion impacts would be substantially higher at buildout than in 2025. Up to 16,473 dwelling units could develop in the five market areas with predominantly steep slopes through buildout. Policies associated with this alternative do not fully address potential erosion impacts associated with nondiscretionary development on steep slopes and erosion impacts associated with agricultural grading activities would continue. In that circumstance, this impact is considered significant.

### **Mitigation Measure 5.9-4—No Project Alternative**

The County shall implement all of the following measures:

- < Mitigation Measure 5.9-4(a): Implement Mitigation Measure 5.1-3(a)
- < Mitigation Measure 5.9-4(b): Restrict Development or Disturbance on Steep Slopes
- < Mitigation Measure 5.9-4(c): Apply Erosion Control Measures to Agricultural Grading

These potential mitigation measures are described below.

### ***Mitigation Measure 5.9-4(a): Implement Mitigation Measure 5.1-3(a)***

The County shall implement Mitigation Measure 5.1-3(a) described in Section 5.1, Land Use and Housing.

***Mitigation Measure 5.9-4(b): Restrict Development or Disturbance on Steep Slopes***

The County shall revise Policy 7.1.2.1 as follows:

**Revised Policy 7.1.2.1:** ~~Discretionary Development~~ or disturbance shall be ~~discouraged~~ prohibited on slopes exceeding ~~forty (40)~~ 25% unless necessary for access.

The County may consider and allow development or disturbance on slopes 25% and greater when:

- ≤ Reasonable use of the property would otherwise be denied.
- ≤ The location is necessary for the protection of the public health, safety, and welfare and there is no feasible alternative, as determined by a California-registered civil engineer or engineering geologist.
- ≤ The project is necessary for the repair of existing infrastructure to avoid and mitigate hazards to the public, as determined by a California-registered civil engineer or an engineering geologist.
- ≤ Replacement or repair of existing structures would occur in substantially the same footprint.

Access corridors on slopes 25% and greater shall have a site specific review of soil type, vegetation, drainage contour, and site placement to encourage proper site selection and mitigation. Septic systems may only be located on slopes under 25%. Roads needed to complete circulation/access and for emergency access may be constructed on such cross slopes if all other standards are met.

***Mitigation Measure 5.9-4(c): Apply Erosion Control Measures to Agricultural Grading***

The County shall adopt the following supplemental policy and implementation measure:

**New Policy:** The County shall require agricultural grading activities that turn over one acre or more of soil to obtain a grading permit. All erosion control measures included in the grading permit would be implemented.

**New Implementation Measure:** The County shall amend the Grading Ordinance to incorporate the provisions of this mitigation measure.

As an alternative, a different acreage threshold can be added and/or a slope threshold can be added to this mitigation measure. These modifications could reduce the measure's potential effectiveness, thereby allowing continued erosion effects from agricultural activities. In that circumstance, this impact would remain significant and unavoidable.

However, if all the proposed mitigation measures are implemented, they would address erosion impacts from development on steep slopes based on development restrictions, ministerial projects would be regulated through the General Plan conformity review process, and agricultural grading activities would be subject to greater regulation through the Grading Ordinance. This impact would be reduced to a less-than-significant level.

#### **Mitigation Measure 5.9-4—Roadway Constrained 6-Lane “Plus” Alternative**

Please refer to the proposed Mitigation Measures 5.9-4(a) and 5.9-4(c) under the No Project Alternative above. In addition, the county shall implement the following measure.

##### ***Mitigation Measure 5.9-4(b): Restrict Development on Steep Slopes***

**Revised Policy CO-1d.** To minimize the potential for erosion and sediment discharge, disturbance of slopes ~~30~~25 percent or greater shall be prohibited unless it is demonstrated by a California-registered civil engineer or an engineering geologist that hazards to public safety can be reduced to acceptable levels.

With implementation of these mitigation measures, this impact would be reduced to a less-than-significant level. If the alternative to Mitigation Measure 5.9-4(c) is implemented, this impact would remain significant and unavoidable for the reasons described above.

#### **Mitigation Measure 5.9-4—Environmentally Constrained Alternative**

Please refer to the proposed Mitigation Measures 5.9-4(a) and 5.9-4(c) under the No Project Alternative above. In addition, the county shall implement the following measure.

##### ***Mitigation Measure 5.9-4(b): Restrict Development on Steep Slopes***

**Revised Policy CO-1d.** To minimize the potential for erosion and sediment discharge, disturbance of slopes ~~30~~25 percent or greater outside of Important Biological Corridor overlay areas shall be prohibited unless it is demonstrated by a California-registered civil engineer or an engineering geologist that hazards can be reduced to acceptable levels.

With implementation of these mitigation measures, this impact would be reduced to a less-than-significant level. If the alternative to Mitigation Measure 5.9-4(c) is implemented, this impact would be remain significant and unavoidable based on the reasons described above.

**Mitigation Measure 5.9-4—1996 General Plan Alternative**

Please refer to the proposed mitigation measures for the No Project Alternative above. With implementation of these mitigation measures, this impact would be reduced to a less-than-significant level. If the alternative to Mitigation Measure 5.9-4(c) is implemented, this impact would be remain significant and unavoidable based on the reasons described above.

Impact  
**5.9-5**

**Reduction in the Accessibility of Mineral Resources.** All four equal-weight alternatives would allow certain residential and nonresidential development in areas that may contain important mineral resources. Based on the urban nature of certain types of development (e.g., paving and structures creating impervious surfaces) and the fact that mining operations cannot be located within a buffer area (10,000 feet) of existing residences because of existing County Ordinance, future development in the county could potentially preclude the exploration for and extraction of mineral resources. Based on allowable land uses in important mineral resource areas per General Plan policy and projected development patterns, the severity of this impact would be greatest under the No Project and 1996 General Plan Alternatives, followed by the Roadway Constrained 6-Lane “Plus,” and Environmentally Constrained Alternatives. This impact is considered **significant**. Impact significance before and after mitigation is shown in the table below.

Impact	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane “Plus”)		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.9-5: Reduction in the Accessibility of Mineral Resources	S <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>3</sub>	S <sub>1</sub>	S <sub>1</sub>

Mitigation	Significance After Mitigation*								
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)		
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout	
5.9-5(a): Restrict Land Use Designations in Areas that May Contain Important Mineral Resources and 5.9-5(b): Amend General Plan Land Use Maps to Remove Land Uses Incompatible with Mineral Resource Overlay Areas	LS	LS	LS	LS	LS	LS	LS	LS	LS
* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.									

The analysis of mineral resource impacts is based primarily on the extent of land uses that could potentially preclude future mineral resource exploration and extraction. Table 5.9-5 shows the quantity (in acres) of various land use designations that underlie identified MRZ-2 areas (based on Mineral Resource -MR overlay designations) across the four equal-weight alternatives. Where the MRZ-2 zones overlapped Community Regions and Rural Centers, the -MR overlay was not applied because of the inherent conflicts with mineral resource extraction activities and the existing, established residential and other higher intensity land uses within those planning concept areas. Areas where MRZ-2 lands were not included in the overlay designation include portions of the Placerville and Diamond Springs community regions, portions of the Garden Valley and Kelsey rural centers, and part of the Crystal Boulevard platted lands area as depicted on the 1996 General Plan land use map. Therefore, there are slightly different totals for each alternative in terms of areas considered to contain important mineral resources in Table 5.9-5.

Land Use	(Alt. #1) No Project <sup>2</sup>	(Alt. #2) Roadway Constrained 6-Lane "Plus"	(Alt. #3) Environmentally Constrained	(Alt. #4) 1996 General Plan
Adopted Plan (AP)	0	0	0	0
Commercial (C)	13	18	13	13
High-Density Residential (HDR)	0	0	0	0
Industrial (I)	28	35	7	28
Low-Density Residential (LDR)	1,447	1,867	1,241	1,447
Medium-Density Residential (MDR)	278	10	0	278
Multi-Family Residential (MFR)	0	0	0	0
Public Facilities (PF)	347	394	346	347
Research & Development (R&D)	0	0	0	0
Rural Residential (RR)	13,417	N/A	N/A	13,417
Rural Land (RL)	N/A	9,534	6,407	N/A
<i>Subtotal</i>	<b>15,530</b>	<b>11,858</b>	<b>8,014</b>	<b>15,530</b>
Agricultural (A)	N/A	N/A	4,006	N/A
Natural Resource (NR)	5,029	9,229	9,368	5,029
Open Space (OS)	2,939	2,939	2,897	2,939
Tourist Recreational (TR)	28	55	28	28
Unassigned (road rights-of-way)	N/A	81	121	N/A
<b>TOTAL</b>	<b>23,525</b>	<b>24,160</b>	<b>24,434</b>	<b>23,525</b>
<sup>1</sup> This information is based on the Mineral Resource (-MR) overlay designations in the General Plan land use maps which are intended to depict MRZ-2 areas from the State classification reports; these overlays vary across project alternatives. <sup>2</sup> The No Project Alternative cannot develop to maximum densities based on residential subdivision restrictions in the Writ. Source: El Dorado County 2001, 2002				

### **No Project Alternative (Alternative #1)**

#### ***Relevant Goals/Policies—No Project Alternative***

The relevant policies included in the 1996 General Plan that are applicable to the No Project alternative are Policies 2.2.2.7, 7.2.1.1 through 7.2.1.3, 7.2.2.1 and 7.2.2.2, 7.2.3.1 and 7.2.3.2, 7.2.3.4 through 7.2.3.13, and 8.2.2.3.

### *No Project Alternative (2025)—Impact Discussion*

Implementation of the No Project Alternative, in conjunction with County regulations, would likely result in the loss in availability of important mineral resources in El Dorado County. Important mineral resource areas have been classified as MRZ-2 in the State Classification Reports. For the most part, these areas have been correspondingly designated as Mineral Resource (-MR) overlay zones on the General Plan land use maps, with the exceptions noted in existing conditions above. By virtue of this overlay designation, important mineral resource areas are protected to a certain degree based on the policies listed above. These policies include Policy 2.2.2.7, which creates the -MR overlay designation, establishes appropriate base land use designations, and provides the County the discretion to review proposed projects in designated mineral resource areas. If a project is approved within an -MR overlay, this policy requires a statement detailing why the project was approved, and also stipulates that the County will consider the values of the threatened mineral resource area and consider the importance of minerals to their market region and to the state and nation. Policies 7.2.1.1 through 7.2.1.3, and 7.2.2.1 further protect known mineral resources by requiring the County to maintain Mineral Land Classification Reports, establishing a Mineral Resource (-MR) combining zone in the Zoning Ordinance, coordinating with the California Department of Conservation in identifying nonmetallic mineral resources, and establishing a minimum parcel size (10 acres) within and adjacent to areas within the -MR overlay, as well as adjacent to existing or potential mining operations.

Policy 7.2.2.2 establishes land use designations potentially compatible with surface mining. However, the base land use designations listed under Policy 2.2.2.7 allow for the development of residential, commercial, industrial, and public facility land uses in -MR areas, which, if developed, could preclude future mineral resource extraction. Many of these land uses, particularly commercial and industrial facilities, create impervious surfaces that would in essence block exploration and extraction activities even with the 10-acre minimum parcel size (Policy 7.2.2.1). In addition, if new residential structures are developed in important mineral resource areas, the opportunities for subsequent mineral exploration and extraction are extremely limited under Measure A (§17.14.095 of the County Code), which stipulates that no strip or open-pit mining activity is allowed within 10,000 feet of any existing residence, hospital, church, or school. Because the No Project Alternative only allows development on existing parcels (i.e., no residential subdivision allowed), future residential development would be low density, as opposed to clustered, thereby removing a larger area from potential mining activity based on the buffer required by Measure A.

According to Table 5.9-5, which shows the quantity of base land use designations that underlie MRZ-2 areas, the No Project Alternative contains a total of 15,530 acres of Low- and Medium-

Density Residential, Rural Residential, Commercial, Industrial, and Public Facility land uses that could be developed in important mineral resource areas. In conflict with Policy 2.2.2.7, medium-density residential land use designations are located in -MR overlay areas. This alternative, along with the 1996 General Plan Alternative, represents the greatest area of land uses that would potentially preclude mineral exploration and extraction activities. However, because of the restrictions in the Writ, development levels through 2025 would be substantially less than the theoretical levels allowed under the land use maps. The expected level of development in important mineral resource areas through 2025 has not been determined because the land use forecasts were not projected on a parcel-by-parcel basis.

Because General Plan policies and County ordinance could result in the loss in accessibility to important mineral resource areas, this impact is considered significant.

#### ***No Project Alternative (Buildout)—Impact Discussion***

At buildout, the No Project Alternative would result in similar impacts as under the 2025 scenario; please refer to No Project (2025)—Impact Discussion above. Approximately 38% more dwelling units and 133% more jobs could be accommodated under this alternative at buildout. By virtue of higher levels of anticipated development, particularly the buildout of 15,530 acres of Low- and Medium-Density Residential, Rural Residential, Commercial, Industrial, and Public Facility land uses in important mineral resource areas, potential impacts associated with the loss in accessibility of mineral resources would be more severe at buildout than under 2025 conditions. This impact is considered significant.

#### **Roadway Constrained 6-Lane “Plus” Alternative (Alternative #2)**

##### ***Relevant Goals/Policies—Roadway Constrained 6-Lane “Plus” Alternative***

The relevant policies that are applicable to the Roadway Constrained 6-Lane “Plus” Alternative are Policies CO-2a through CO-2h.

##### ***Roadway Constrained 6-Lane “Plus” Alternative (2025)—Impact Discussion***

Implementation of the Roadway Constrained 6-Lane “Plus” Alternative would result in the loss in accessibility to important mineral resources in El Dorado County through 2025 based on allowable land use designations and policies. Under this alternative, the -MR overlay designation acknowledges locations of known mineral resources (Policy CO-2a). Policy CO-2b allows for the development of residential uses (i.e., Rural Lands) and nonresidential uses (i.e., Commercial, Industrial, and Public Facilities) in important mineral resource areas, which, if

developed, could preclude future mineral resource extraction. This is based on the characteristics of these land uses and the fact that County ordinance (Measure A) prohibits new strip or open-pit mining within 10,000 feet of any existing residence; please refer to No Project (2025)—Impact Discussion above. Unlike the No Project and 1996 General Plan alternatives, however, this alternative does not consider Low-Density Residential (LDR) as an appropriate base land use designation (Policy CO-2b). Nevertheless, a total of 11,858 acres of Low-Density Residential, Rural Land, Commercial, Industrial, and Public Facilities land uses remain planned in important mineral resources areas. In conflict with Policy CO-2b, low density residential land use designations are located in -MR overlay areas. Because the land use maps depict maximum buildout intensities, the projected level of development in important mineral resource areas would be considerably less through 2025. The expected level of development in important mineral resource areas through 2025 has not been determined because the land use forecasts were not projected on a parcel-by-parcel basis.

Other policies —Policies CO-2c through CO-2h—address the treatment of mineral resources in the county. Policy CO-2c requires a minimum parcel size of 10 acres within and adjacent to -MR overlay areas. However, these policies do not address the loss in accessibility to mineral resources resulting from the implementation of Measure A. Therefore, this impact is considered significant.

#### ***Roadway Constrained 6-Lane “Plus” Alternative (Buildout)—Impact Discussion***

At buildout, the Roadway Constrained 6-Lane “Plus” Alternative could potentially develop roughly 61% more dwelling units and 152% more jobs than under 2025 conditions. Because more development could be accommodated at buildout, particularly the potential development of all 11,858 acres of Low-Density Residential, Rural Land, Commercial, Industrial, and Public Facility land uses in important mineral resource areas, there is greater potential for losses in the accessibility to known mineral resources relative to 2025 conditions. This impact is considered significant.

#### **Environmentally Constrained Alternative (Alternative #3)**

##### ***Relevant Goals/Policies—Environmentally Constrained Alternative***

For the relevant policies of the Environmentally Constrained Alternative, please refer to the policies listed above under Relevant Goals/Policies—Roadway Constrained 6-Lane “Plus” Alternative.

### ***Environmentally Constrained Alternative (2005)—Impact Discussion***

The Environmentally Constrained Alternative could potentially result in the loss in accessibility of known mineral resources in the county; please refer to Roadway Constrained 6-Lane “Plus” Alternative (2025)—Impact Discussion above. Unique to this alternative is that Agricultural (A) land uses are an allowed land use under the -MR overlay designation; agricultural uses would not typically preclude future mining opportunities.

Based on the land use map, a total of 8,014 acres of Low-Density Residential, Rural Land, Commercial, Industrial, and Public Facilities would be allowed to develop in areas known to contain important mineral resources. In conflict with Policy CO-2b, low density residential land use designations are located in -MR overlay areas. This would potentially preclude future mineral resource exploration and extraction based on the characteristics of these land uses and the implementation of Measure A. Because the land use maps depict maximum buildout intensities, the projected level of development in important mineral resource areas would be considerably less through 2025. This impact is considered significant.

### ***Environmentally Constrained Alternative (Buildout)—Impact Discussion***

Under the Environmentally Constrained Alternative, impacts at buildout could potentially be more severe than under 2025 conditions because all 8,014 acres of Low-Density Residential, Rural Land, Commercial, Industrial, and Public Facility land uses could develop in important mineral resource areas. This impact is considered significant.

### **1996 General Plan Alternative (Alternative #4)**

#### ***Relevant Goals/Policies—1996 General Plan Alternative***

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under Relevant Goals/Policies—No Project Alternative.

#### ***1996 General Plan Alternative (2025)—Impact Discussion***

Like the other equal-weight alternatives, the 1996 General Plan Alternative could result in the loss in accessibility to known mineral resources in El Dorado County through the planning horizon (2025) based on allowed land uses in areas known to contain important mineral resources; please refer to No Project Alternative (2025)—Impact Discussion above. As under the No Project Alternative, a total of 15,530 acres of Low- and Medium-Density Residential, Rural Residential, Commercial, Industrial, and Public Facilities land uses could potentially

develop in important mineral resource areas. The entire 15,530 acres are not projected to develop through the planning horizon (2025); however, based on the fact that this alternative is not subject to Writ constraints on development, it would likely result in higher development levels in important mineral resource areas than would the No Project Alternative. In conjunction with the provisions of Measure A and the characteristics of allowed land uses, there is the potential for the loss in the accessibility of mineral resources under this alternative; this impact is considered significant.

#### ***1996 General Plan Alternative (Buildout)—Impact Discussion***

Through buildout, the 1996 General Plan Alternative would continue to accommodate higher levels of development in areas known to contain important mineral resource areas. Because development levels could be substantially higher at buildout, there is a higher potential for development in areas with known mineral resources than under 2025 conditions. All 15,530 acres of land uses that could potentially preclude mineral resource exploration and extraction could be developed through buildout. This impact is considered significant.

#### **Mitigation Measure 5.9-5—No Project Alternative**

The County shall implement both of the following measures:

- < Mitigation Measure 5.9-5(a): Restrict Land Use Designations in Areas that May Contain Important Mineral Resources
- < Mitigation Measure 5.9-5(b): Amend General Plan Land Use Maps to Remove Designated Land Uses Incompatible with Mineral Resource Overlay Areas

These potential mitigation measures are described below.

#### ***Mitigation Measure 5.9-5(a): Restrict Land Use Designations in Areas that May Contain Important Mineral Resources***

The County shall revise Policies 2.2.2.7 and 7.2.2.2 as follows:

**Revised Policy 2.2.2.7:** The purpose of the Mineral Resource (-MR) overlay designation is to identify those areas that are designated as Mineral Resource Zone 2 (MRZ 2xx) on the State Classification Reports. Only the following land use designations shall be appropriate in areas designated MRZ-2xx in the State Classification Reports.

The -MR overlay shall only be considered appropriate with the following base land use designations:

Natural Resource (NR)  
Open Space (OS)  
Industrial (I)  
~~Commercial (C)~~  
~~Public Facilities (PF)~~  
~~Rural Residential (RR)~~  
~~Low Density Residential (LDR)~~

If appropriate, said properties shall also be similarly zoned with Mineral Resource (-MR) combining zone district in conformance with Policy 7.2.1.2. Industrial uses shall be limited to those uses compatible with mineral exploration.

**Revised Policy 7.2.2.2:** The General Plan designations, as shown on the General Plan land use maps, which are considered potentially compatible with surface mining shall include:

< Natural Resource (NR)  
< Open Space (OS)  
< Industrial (I)  
~~< Public Facilities (PF)~~  
~~< Rural Residential (RR)~~  
~~< Commercial (C)~~  
~~< Low Density Residential (LDR)~~

All other General Plan designations are determined to be incompatible for surface mining. Industrial uses shall be limited to those compatible with mineral exploration.

As an alternative to Revised Policies 2.2.2.7 and 7.2.2.2, the County shall amend Measure A to allow Public Facility and Rural Residential land uses to be located within 10,000 feet of a new strip or open-pit mining operations.

***Mitigation Measure 5.9-5(b): Amend General Plan Land Use Maps to Remove Designated Land Uses Incompatible with Mineral Resource Overlay Areas***

The County shall amend the General Plan land use map, redesignating areas with land uses considered incompatible with Mineral Resource overlay areas to compatible land uses.

Mitigation Measure 5.9-5(a) would restrict the types of land uses that could be developed in important mineral resources areas, thereby minimizing development that could preclude future exploration of mining resources both directly through the creation of impervious surfaces, and indirectly through required buffer areas under Measure A. In addition, Mitigation Measure 5.9-5(b) would modify the proposed General Plan land use map to ensure compatibility between land uses and important mineral resource areas. This impact would be reduced to a less-than-significant level. If the alternative to Mitigation Measure 5.9-6(a) is implemented, indirect impacts associated with Measure A would be eliminated, but certain uses (i.e., Industrial, Commercial, and Public Facilities) would still be allowed in important mineral resource areas which would create impervious surfaces that may hinder future mineral resource exploration and extraction. In that circumstance, this impact would remain significant and unavoidable.

**Mitigation Measure 5.9-5—Roadway Constrained 6-Lane “Plus” Alternative**

The County shall implement both of the following measures:

- < Mitigation Measure 5.9-5(a): Restrict Land Use Designations in Areas that May Contain Important Mineral Resources
- < Mitigation Measure 5.9-5(b): Amend General Plan Land Use Maps to Remove Designated Land Uses Incompatible with Mineral Resource Overlay Areas

These potential mitigation measures are described below.

***Mitigation Measure 5.9-5(a): Restrict Land Use Designations in Areas that May Contain Important Mineral Resources***

The County shall revise Policy CO-2b as follows:

**Revised Policy CO-2b:** Application of the Mineral Resource (-MR) overlay designation and the extraction of mineral resources shall be considered appropriate only on lands having the Natural Resource, Open Space, and, Industrial, ~~Commercial, Rural Lands, and Public Facilities~~ designations. All other General Plan land use designations are considered incompatible with mining. If additional -MR overlay lands are identified and the base land use designation is incompatible, a General Plan amendment must be approved to change the base land use designation at the time the -MR overlay is applied. If an -MR overlay is placed on lands with an incompatible land use designation, a General Plan Amendment must be processed to change the base land use

designation to one compatible with the -MR overlay within a reasonable time.  
Industrial uses shall be limited to those uses compatible with mineral exploration.

As an alternative to Revised Policy CO-2b, the County shall amend Measure A to allow Public Facility and Rural Residential land uses to be located within 10,000 feet of a new strip or open-pit mining operations.

For the reasons described above, this mitigation measure would reduce this impact to a less-than-significant level.

***Mitigation Measure 5.9-5(b): Amend General Plan Land Use Maps to Remove Designated Land Uses Incompatible with Mineral Resource Overlay Areas***

Please refer to the proposed Mitigation Measure 5.9-5(b) for the No Project Alternative above.

**Mitigation Measure 5.9-5—Environmentally Constrained Alternative**

***Mitigation Measure 5.9-5(a): Restrict Land Use Designations in Areas that May Contain Important Mineral Resources***

The County shall revise Policy CO-2b as follows:

**Revised Policy CO-2b:** Application of the Mineral Resource (-MR) overlay designation and the extraction of mineral resources shall be considered appropriate only on lands having the Natural Resource, Open Space, Industrial, ~~Commercial, Rural Lands, and~~ Agricultural Lands, and Public Facilities designations. All other General Plan land use designations are considered incompatible with mining. If additional -MR overlay lands are identified and the base land use designation is incompatible, a General Plan amendment must be approved to change the base land use designation at the time the -MR overlay is applied. Industrial uses shall be limited to those uses compatible with minerable exploration.

As an alternative to Revised Policy CO-2b, the County shall amend Measure A to allow Public Facility and Rural Residential land uses to be located within 10,000 feet of a new strip or open-pit mining operations.

For the reasons described above, this mitigation measure would reduce this impact to a less-than-significant level.

**Mitigation Measure 5.9-5(b): Amend General Plan Land Use Maps to Remove Designated Land Uses Incompatible with Mineral Resource Overlay Areas**

Please refer to the proposed Mitigation Measure 5.9-5(b) for the No Project Alternative above.

**Mitigation Measure 5.9-5—1996 General Plan Alternative**

Please refer to the proposed mitigation measures for the No Project Alternative above. For the reasons described above, these mitigation measures would reduce this impact to a less-than-significant level.

Impact  
5.9-6

**Issues of Land Use Compatibility with Mining Operations.** Land uses under the proposed General Plan could potentially develop near existing mining operations, thereby resulting in land use compatibility issues. Under all four equal-weight alternatives, however, all parcels in or adjacent to -MR overlay areas and adjacent to active mining operations have a minimum parcel size of 10 acres. This creates the potential for a buffer between land uses and mining operations that may have potential compatibility issues. Existing residences would be buffered from future mining operations via County ordinance. Lastly, all new mining operations are subject to the discretionary approval process, which involves the consideration of environmental factors, and must have a reclamation plan pursuant to SMARA. However, because the 10-acre minimum parcel size does not ensure, nor are there requirements for, adequate buffer areas under the No Project and 1996 General Plan Alternatives, and ministerial projects are not subject to the discretionary review process that would ensure sufficient buffer areas under the Roadway Constrained 6-Lane “Plus” and Environmentally Constrained Alternatives, land use compatibility issues associated with mining operations would remain. Based on policies, the severity of this impact would be greatest under the No Project and 1996 General Plan Alternatives, followed by the Roadway Constrained 6-Lane “Plus” and Environmentally Constrained Alternative. This impact is considered **significant**. Impact significance before and after mitigation is shown in the table below.

Impact	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.9-6: Issues of Land Use Compatibility with Mining Operations	S <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>2</sub>	S <sub>2</sub>	S <sub>2</sub>	S <sub>1</sub>	S <sub>1</sub>
Mitigation	Significance After Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.9-6(a), Implement Mitigation Measure 5.1-3(a); 5.9-6(b), Establish Buffers between New Development and Mining Operations; and 5.9-6(c), Require 20-Acre Minimum Parcel Sizes	LS	LS	—	—	—	—	LS	LS
5.9-6(a), Implement Mitigation Measure 5.1-3(a); and 5.9-6(b), Require 20-Acre Minimum Parcel Sizes	—	—	LS	LS	LS	LS	—	—
* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.								

The development of new mineral resource operations in proximity to other urban-type land uses (e.g., residential, commercial, research and development, public facility) could potentially result in land use incompatibilities based on the range of environmental effects that may be generated by mining operations, such as noise, air emissions, light/glare, heavy truck traffic, disturbance of biological resources, disturbance of cultural resources, and degradation of water quality. These same incompatibilities can also arise when urban uses are developed in proximity to existing mining operations.

## **No Project Alternative (Alternative #1)**

### ***Relevant Goals/Policies—No Project Alternative***

The relevant policies included in the 1996 General Plan that are applicable to the No Project alternative are Policies 7.2.2.1, 7.2.3.1 and 7.2.3.2, and 7.2.3.4 through 7.2.3.13.

### ***No Project Alternative (2025)—Impact Discussion***

Land use incompatibility issues are addressed in the No Project policy set. Policy 7.2.2.1 requires a minimum 10-acre parcel size within and adjacent to -MR overlay areas. This requirement serves to allow the possibility of a buffer between potentially incompatible land uses. The objectives of Policies 7.2.3.1 and 7.2.3.2 and 7.2.3.4 through 7.2.3.13 include but are not limited to requiring mining operations to obtain a special-use permit and develop a reclamation plan pursuant to SMARA; requiring the County to consider a range of environmental issues when reviewing mining applications; and placing permit conditions that would minimize significant adverse environmental effects of mining operations. These requirements ensure that mining operations are subject to the discretionary review process, and that environmental effects are considered. In addition, Measure A prohibits new strip or open-pit mining within 10,000 feet of any residential use, hospital, place of worship, or school. Policy 7.2.3.3 requires the County to protect other uses from mining operations.

These policies and the County ordinance adequately address compatibility issues associated with the development of new mines in proximity to other sensitive land uses. However, there is the potential for these urban-type land uses to be developed in proximity to existing mining operations, thus resulting in the land use incompatibilities described above because there are no established buffer requirements. The minimum parcel size of 10 acres does not ensure an adequate buffer area such that these incompatibilities would be avoided (e.g., structures could be developed near property boundaries adjacent to mining operations). In addition, nondiscretionary projects would not be subject to the County review process. Future residential growth under the No Project Alternative will be comprised of ministerial development, with the exception of existing commitments. Although the number of new units is the least of the four equal-weight alternatives, the fact that development under this alternative is not subject to the discretionary review process could allow development near existing mining operations resulting in land use compatibilities. Therefore, this impact is considered significant.

### ***No Project Alternative (Buildout)—Impact Discussion***

At buildout, the No Project Alternative would result in similar impacts as under the 2025 scenario; please refer to No Project Alternative (2025)—Impact Discussion above. This impact is considered significant.

### **Roadway Constrained 6-Lane “Plus” Alternative (Alternative #2)**

#### ***Relevant Goals/Policies—Roadway Constrained 6-Lane “Plus” Alternative***

The relevant policies that are applicable to the Roadway Constrained 6-Lane “Plus” Alternative are Policies CO-2c, CO-2d, CO-2e, and CO-2h.

#### ***Roadway Constrained 6-Lane “Plus” Alternative (2025)—Impact Discussion***

Implementation of the Roadway Constrained 6-Lane “Plus” Alternative has the potential to result in the same type of land use compatibility issues as described under the No Project Alternative; please refer to the No Project Alternative (2025)—Impact Discussion above. However, this alternative implements a different policy set that affects the way potential compatibility issues are treated.

The key policies in the Roadway Constrained 6-Lane “Plus” Alternative are Policies CO-2c, CO-2d, and CO-2e. These policies require a minimum parcel size of 10 acres in and adjacent to -MR overlay areas and active mines, require new nonmining uses adjacent to existing mining operations to be designed to provide a buffer between the new development and the mining operation, and provide protection to Commercial, Research and Development, and Public Facilities lands from adverse environmental effects of new mining operations. The unique aspect of this alternative is that it contains policies that require buffer areas between potentially incompatible land uses (Policy CO-2d), beyond the 10-acre minimum parcel size, when new development is proposed in proximity to mining operations. However, because this policy would only apply to discretionary projects, nondiscretionary projects (e.g., single-family residences on existing parcels) could still develop near existing mining operations, thereby resulting in land use conflicts. This impact is considered significant.

#### ***Roadway Constrained 6-Lane “Plus” Alternative (Buildout)—Impact Discussion***

At buildout, the Roadway Constrained 6-Lane “Plus” Alternative would result in similar impacts as under the 2025 scenario; please refer to Roadway Constrained 6-Lane “Plus” Alternative (2025)—Impact Discussion above. This impact is considered significant.

### **Environmentally Constrained Alternative (Alternative #3)**

#### ***Relevant Goals/Policies—Environmentally Constrained Alternative***

For the relevant policies of the Environmentally Constrained Alternative, please refer to the policies listed above under Relevant Goals/Policies—Roadway Constrained 6-Lane “Plus” Alternative.

#### ***Environmentally Constrained Alternative (2025)—Impact Discussion***

The Environmentally Constrained Alternative would result in similar impacts to the Roadway Constrained 6-Lane “Plus” Alternative because they implement the same policy sets. However, under this alternative, more extensive residential subdivision is allowed, thereby allowing the application of policies to discretionary projects. Therefore, this alternative is more protective than the Roadway Constrained 6-Lane “Plus” Alternative. This impact is considered significant.

#### ***Environmentally Constrained Alternative (Buildout)—Impact Discussion***

At buildout, the Environmentally Constrained Alternative would result in similar impacts as under the 2025 scenario; please refer to Environmentally Constrained Alternative (2025)—Impact Discussion above. This impact is considered significant.

### **1996 General Plan Alternative (Alternative #4)**

#### ***Relevant Goals/Policies—1996 General Plan Alternative***

For relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under Relevant Goals/Policies—No Project Alternative.

#### ***1996 General Plan Alternative (2025)—Impact Discussion***

Because the 1996 General Plan Alternative implements the same policy set as the No Project Alternative, similar impacts would occur. These policies, however, would be applied through the discretionary review process under this alternative. Nevertheless, ministerial projects could still be developed in areas subject to adverse environment effects generated by mining operations. This is considered a significant impact.

***1996 General Plan Alternative (Buildout)—Impact Discussion***

At buildout, the 1996 General Plan Alternative would result in similar impacts as under the 2025 scenario; please refer to 1996 General Plan Alternative (2025)—Impact Discussion above. This impact is considered significant.

**Mitigation Measure 5.9-6—No Project Alternative**

The County shall implement all of the following measures:

- < Mitigation Measure 5.9-6(a): Implement Mitigation Measure 5.1-3(a)
- < Mitigation Measure 5.9-6(b): Establish Buffers between New Development and Mining Operations
- < Mitigation Measure 5.9-6(c): Require 20-Acre Minimum Parcel Sizes

These potential mitigation measures are described below.

***Mitigation Measure 5.9-6(a): Implement Mitigation Measure 5.1-3(a)***

The County shall implement Mitigation Measure 5.1-3(a) described in Section 5.1, Land Use and Housing.

***Mitigation Measure 5.9-6(b): Establish Buffers between New Development and Mining Operations***

The County shall implement the following supplemental policy:

**New Policy:** The County shall require that new nonmining land uses adjacent to existing mining operations be designed to provide a buffer sufficient to protect the mining operation between the new development and the mining operation(s).

***Mitigation Measure 5.9-6(c): Require 20-Acre Minimum Parcel Sizes***

The County shall revise Policy 7.2.2.1 as follows:

**Revised Policy 7.2.2.1:** The minimum parcel size within, or adjacent to, areas subject to the -MR overlay shall be ~~ten (10)~~ twenty (20) acres unless the applicant can demonstrate to the approving authority that there are no economically significant

mineral deposits on or adjacent to the project site and that the proposed project will have no adverse effect on existing or potential mining operations. The minimum parcel size adjacent to active mining operations which are outside of the -MR overlay shall also be ~~ten (10)~~ twenty (20) acres.

Mitigation Measure 5.9-6(a) would ensure that ministerial projects are reviewed to avoid land use incompatibilities between mining operations and surrounding land uses, and Mitigation Measure 5.9-6(b) establishes buffer areas to avoid such incompatibilities. Mitigation Measure 5.9-6(c) does not completely address land use incompatibilities because minimum parcel sizes cannot ensure that future development and mining operations would not be developed near each other. However, it would reduce the quantity of development and people exposed to mining operations, thereby reducing the potential number of complaints. These mitigation measures, in conjunction with each other, would reduce impacts to a less-than-significant level.

**Mitigation Measure 5.9-6—Roadway Constrained 6-Lane “Plus” Alternative**

The County shall implement both of the following measures:

- < Mitigation Measure 5.9-6(a): Implement Mitigation Measure 5.1-3(a)
- < Mitigation Measure 5.9-6(b): Require 20-Acre Minimum Parcel Sizes

These potential mitigation measures are described below.

***Mitigation Measure 5.9-6(a): Implement Mitigation Measure 5.1-3(a)***

Please refer to the proposed Mitigation Measure 5.9-6(a) for the No Project Alternative.

***Mitigation Measure 5.9-6(b): Require 20-Acre Minimum Parcel Sizes***

The County shall revise Policy CO-2c as follows:

**Revised Policy CO-2c:** The County shall not approve new land divisions with a minimum parcel size of less than ~~ten~~ twenty acres within, or adjacent to, areas subject to the Mineral Resource (-MR) General Plan land use overlay and active mines unless it can be demonstrated that there are no economically significant mineral deposits on or adjacent to the project site or that any proposed projects will have no adverse effect on existing or potential mining operations.

With implementation of these mitigation measures, impacts would be reduced to a less-than-significant level for the reasons described above.

**Mitigation Measure 5.9-6—Environmentally Constrained Alternative**

Please refer to the proposed mitigation measures for the Roadway Constrained 6-Lane “Plus” Alternative above. With implementation of these mitigation measures, impacts would be reduced to a less-than-significant level for the reasons described above.

**Mitigation Measure 5.9-6—1996 General Plan Alternative.**

Please refer to the proposed mitigation measures for the No Project Alternative above. With implementation of these mitigation measures, impacts would be reduced to a less-than-significant level for the reasons described above.