4.2 LAND RESOURCES

This section identifies the environmental and safety impacts of the Proposed Project alternatives related to the existing Land Resources identified in **Section 3.2**. The general topics considered here include topography, soils, seismicity and mineral resources. Mitigation Measures are discussed in **Section 5.2.1**.

4.2.1 ALTERNATIVE A – PROPOSED PROJECT

TOPOGRAPHY

Development of Alternative A would result in localized alterations to the topographical characteristics of the Madera site. 200,000 cubic yards of fill material excavated during construction of stormwater detention basins would be incorporated into the site grading. The overall topography of the Madera site, however, would remain essentially unchanged.

Usage of on-site wells for Alternative A would result in the lowering of the water table, at least locally, potentially resulting in land subsidence, which is a problem in some parts of the San Joaquin Valley, particularly in the western portions of the valley. Much of the subsidence in the San Joaquin Valley occurred during periods of increasing groundwater demand and decreasing groundwater levels from the 1920s to the 1970s. Since the 1970s, ground subsidence has generally stopped or continued at a much lower rate due to increased surface water deliveries. Most of the area in which subsidence occurred is underlain by the Corcoran Clay, which is the major regional aquitard that separates the San Joaquin Valley's confined and unconfined aquifer systems (Komex, 2006 – **Appendix L**).

Fairly minimal ground subsidence of up to approximately one foot has been documented west of the City of Madera in the vicinity of the Madera Ranch, despite the fact that the area has been subject to extensive groundwater pumping from both above and below the Corcoran Clay over the last 100 years. No subsidence affected area is known or expected to exist in the vicinity of the Madera site. Given the relative resistance to subsidence of the nearby Madera Ranch area and the fact that the Madera site is underlain by an unconfined aquifer system, which is less susceptible to pumping induced subsidence, significant ground subsidence is not expected to be associated with the proposed project (Komex, 2006 – **Appendix L**).

Given that grading of the Madera site would not result in noticeable changes to topography and additional subsidence is not expected, Alternative A would not have a significant impact upon Madera site topography.

SOIL

The soils at the Madera site range from poorly drained to excessively drained, with generally moderate erosion hazards. The Grading and Drainage plan described in **Section 2.0** outlines several best management practices (BMPs), including the development of an erosion control plan, that would address and reduce erosion hazards. As such, the design and buildout of Alternative A would not significantly affect soils on the Madera site.

Landslide Hazards

Since the Madera site is flat and level, no impact associated with landslide hazards would occur. Moreover, the BMPs outlined for erosion control would also diminish the slide hazards localized around drainages and detention basins.

SEISMICITY

Section 3.2 identifies the probability for a seismic event to cause destructive ground acceleration at the Madera site. The nearest seismic hazard is the San Andreas Fault, located approximately 40 miles southwest of the Madera site. As discussed in **Section 3.2**, the Madera site is shown by the United States Geological Survey (USGS) to lie within an area anticipated to be subject to 0.2g to 0.3g maximum peak acceleration, with a 2% chance of exceedance in 50 years. The hazards to public safety related to seismically induced structural failure would be considered a potentially significant impact. Mitigation measures related to seismicity on the Madera site appear in **Section 5.2**. Adoption of the mitigation will reduce seismicity impacts to a less than significant level.

Soil Liquefaction

Due to the coarse, grainy composition of soils on the Madera site, the risk for soil liquefaction is low. Therefore, no significant impact related to liquefaction would occur during a seismic event.

Seismically Induced Flooding

No dams or water bodies above grade exist in the vicinity of the Madera site. Therefore, no impact related to seismically induced flooding would occur under Alternative A.

MINERAL RESOURCES

Alteration in the land use under Alternative A would not result in a loss of economically viable aggregate rock or diminish the extraction of important ores or minerals. Because there are no known or mapped mineral resources within the project area, development and use of the land would not be affected by such resources. There are no abandoned mines, shafts, or tailing that would affect development. Therefore, no impact related to mineral resources would occur as a result of this alternative.

4.2.2 ALTERNATIVE B – REDUCED INTENSITY

TOPOGRAPHY

Buildout of Alternative B would be similar in footprint to that for Alternative A, though at a reduced scale. Construction would therefore entail localized alterations to the topographical characteristics of the Madera site. Surface grading for facilities would incorporate the use of approximately 170,000 cubic yards of fill material obtained on-site by the excavation of detention basins. The overall topography of the Madera site, however, would remain unchanged. Subsidence effects would be lessened when compared to Alternative A due to the lower water demands of Alternative B. As such, buildout of Alternative B would not have a significant impact upon Madera site topography.

SOIL

As stated above, the soils at the Madera site range from poorly drained to excessively drained, with generally moderate erosion hazards. The Grading and Drainage plan described in **Section 2.0** outlines several best management practices (BMPs), including the development of an erosion control plan, that would address and reduce erosion hazards. As such, the design and buildout of Alternative B would not significantly affect soils on the Madera site.

Landslide Hazards

Since the Madera site is flat and level, no impact would occur associated with landslide hazards. Moreover, the BMPs outlined for erosion control would also diminish slide hazards localized around drainages and detention basins.

SEISMICITY

The seismic conditions, hazards and impacts related to Alternative B are similar to those identified for Alternative A, above. As with Alternative A, the hazards to public safety related to seismically induced structural failure would be considered a potentially significant impact. Mitigation measures related to seismicity on the Madera site appear in **Section 5.2**. Adoption of the mitigation will reduce seismicity impacts to a less than significant level.

Soil Liquefaction

Due to the coarse, grainy composition of soils on the Madera site, the risk for soil liquefaction is low. Therefore, no significant impact related to liquefaction would occur during a seismic event.

Seismically Induced Flooding

No dams or water bodies above grade exist in the vicinity of the Madera site. Therefore, no impact related to seismically induced flooding would occur under Alternative B.

MINERAL RESOURCES

Alteration in the land use under Alternative B would not result in a loss of economically viable aggregate rock or diminish the extraction of important ores or minerals. As with Alternative A above, there are no abandoned mines, shafts, or tailing that would affect development. Therefore, no impact related to mineral resources would occur as a result of this alternative.

4.2.3 ALTERNATIVE C – NON-GAMING USE

TOPOGRAPHY

Buildout of the proposed project under Alternative C would entail similar alterations to the topographical characteristics of the Madera site as for Alternative A and Alternative B, although at a lower scale. As such, buildout of Alternative C would not have a significant impact upon Madera site topography.

SOIL

As stated above, the soils at the Madera site range from poorly drained to excessively drained, with generally moderate erosion hazards. The Grading and Drainage plan described in **Section 2.0** outlines several BMPs, including the development of an erosion control plan, that would address and reduce erosion hazards. As such, the design and buildout of Alternative C would not significantly affect soils on the Madera site.

Landslide Hazards

Since the Madera site is flat and level, no impact would occur associated with landslide hazards. Moreover, the BMPs outlined for erosion control would also diminish slide hazards localized around drainages and detention basins.

SEISMICITY

The seismic conditions, hazards and impacts related to Alternative C are similar to those identified for Alternatives A and B. As with Alternative A, the hazards to public safety related to seismically induced structural failure would be considered a potentially significant impact. Mitigation measures related to seismicity on the Madera site appear in **Section 5.2**. Adoption of the mitigation will reduce seismicity impacts to a less than significant level.

Soil Liquefaction

Due to the coarse, grainy composition of soils on the Madera site, the risk for soil liquefaction is low. Therefore, no significant impact related to liquefaction would occur during a seismic event.

Seismically Induced Flooding

No dams or water bodies above grade exist in the vicinity of the Madera site. Therefore, no impact related to seismically induced flooding would occur under Alternative C.

MINERAL RESOURCES

Alteration in the land use under Alternative C, as under Alternatives A and B above, would not result in impacts to mineral resources.

4.2.4 ALTERNATIVE D – NORTH FORK LOCATION

TOPOGRAPHY

The preliminary grading plan (**Appendix K**), calls for cutting out a building pad in the middle of the site and creating soil stabilization areas on all sides of the pad at a slope of 2 to 1. Buildout of Alternative D would entail the use of approximately 600,000 cubic yards of displaced or imported fill material to provide a surface appropriate for construction, as well as to construct stormwater detention basins. This would be a localized alteration and the general topographical character of the region would remain unchanged. Ground subsidence from groundwater pumping generally does not occur in fractured rock aquifers like those that underlie the North Fork site. Creation of soil stabilization areas with a slope of 2:1 would not lead to slope instability unless they are improperly designed without erosion control measures, in which case a potentially significant impact would result. Mitigation measures are included in **Section 5.2.1** that would ensure impacts are less than significant.

SOIL

The soils on the North Fork Rancheria are of the Tollhouse association, and subject to erosion due to the inclines found on and around the North Fork site. The Grading and Drainage plan described in **Section 2.0** outlines several Best Management Practices (BMPs), including the development of an erosion control plan, that would address and negate erosion hazards. As such, the design and buildout of Alternative D would not significantly affect soils on the North Fork site.

Landslide Hazards

While the North Fork site is surrounded by inclined ground surfaces, the Grading and Drainage Plan described in **Section 2.0** includes the incorporation of BMPs for compaction and erosion control that would also negate slide hazards around building and parking features, drainages and detention basins. Therefore, landslide-related impacts as a result of Alternative D would be less than significant.

SEISMICITY

The North Fork Rancheria is approximately 80 miles northeast of the San Andreas Fault. Another fault system created by the continual uplift of intrusive igneous matter exists approximately six miles to the northeast of the North Fork site. The North Fork site is shown by the United States Geological Survey (USGS) to lie within an area anticipated to be subject to 0.3g to 0.4g maximum peak acceleration, with a 2% chance of exceedance in 50 years. The hazards to public safety associated with potential structural failure under these conditions would be considered a significant impact. Mitigation appears in **Section 5.2**. Adoption of the mitigation will reduce seismicity impacts to a less than significant level.

Soil Liquefaction

Due to the coarse composition of soils and reduced potential for significant seismic events on the North Fork site, the risk for soil liquefaction is low. Therefore, no significant impact related to liquefaction would occur under this alternative.

Seismically Induced Flooding

No dams or water bodies above grade exist in the vicinity of the North Fork site. Therefore, no impact related to seismically induced flooding would occur under Alternative D.

MINERAL RESOURCES

Alteration in the land use under Alternative D would not result in a loss of economically viable aggregate rock or diminish the extraction of important ores or minerals. There are no abandoned mines, shafts, or tailing that would affect development. Therefore, no impact related to mineral resources would occur as a result of this alternative.

4.2.5 ALTERNATIVE E – NO ACTION

Under the No Action Alternative, no development would take place on the project site or on the Alternative site. For the purposes of the environmental analysis in this EIS, it is assumed that the use of the Madera site would not change under this alternative. Therefore, no impact would occur under Alternative E.