5.6 - Geology and Soils

5.6.1 - Introduction

This section of the Draft EIR includes information related to the geologic properties of the land and soils on the project site and the ability of the land to support development. Preparation of this section of the Draft EIR conforms to the recommendations contained in the Madera County General Plan, the Rio Mesa Area Plan (RMAP), the North Fork Village 1 (NFV-1) Specific Plan, and evaluates additional information specific to the project site.

The following technical studies prepared specifically for the NFV-1 Project are contained in the Appendix E, Geology and Soils, of this Draft EIR:

- Preliminary Geotechnical Feasibility Investigation - Proposed North Fork Village, Madera, CA. Technicon Engineering Services, Inc. March 2005.

Rio Mesa Area Plan and EIR

The RMAP gives overall definition and guidelines for development of the 15,000-acre plan area. The RMAP EIR provided preliminary analysis of the geomorphic characteristics of the site including the potential for seismic hazard, landslides, and slope stability within the area of the proposed NFV-1. The RMAP EIR identified the need for further study prior to the approval of specific development proposals and identified mitigation measures to reduce impacts within the Area Plan to a level of less than significant.

The Madera County General Plan and RMAP contain policies regarding seismic hazards with the goal to minimize the loss of life, injury, and property damage due to seismic and geological hazards. The Madera County General Plan Environmental Impact Report found that the policies contained in the General Plan would reduce potential environmental impacts to a level of less than significant.

5.6.2 - Existing Conditions

Topography

The NFV-1 Specific Plan site is situated in Madera County, approximately 1 mile northwest of the town of Friant, California. The property is bounded by the Sierra Nevada foothills to the north, Road 206 to the west and to the south, and Lake Millerton to the east. According to the U. S. Geological Survey (USGS) 7.5-minute Millerton Lake West, California, and Friant, California, topography quadrangle maps, dated 1965 (photo revised 1981) and 1964, respectively, the southern area of NFV-1 occupies a portion of the western half of Section 6, Township 11 South, Range 21 East, and a portion of the eastern half of section 1, Township 11 South, range 20 East, Mount Diablo Baseline and Meridian. The site is characterized by rolling hillsides at elevations ranging from approximately 350 above mean sea level (amsl) to 1,400 amsl. Approximately 35 percent of the property has slopes exceeding 25 percent. Steep north-south trending bluffs reside within the northernmost regions of the site, and Cottonwood Creek bisects the site. Cottonwood Creek has a 40-square-mile tributary, and a portion of its 100-year flood plain is within the boundaries of the site.

An approximately 50-foot exposure of the Friant Pumice member of the Turlock Formation (also known as Chalk Cliff) is located along the southwestern side of Cottonwood Creek. Additional mining activities were also conducted in Planned Areas (PA) where trenches and/or horizontal mine shafts are present.

Geology and Soils

The project site is located in the foothills of the Sierra Nevada Mountain Range above the San Joaquin Valley, which is in the southern half of the Great Central Valley of California. The Great Central Valley is an elongated structural trough in the interior of California which has been filled with a thick sequence of sediments derived by erosion of the bordering Sierra Nevada and Coast Ranges. The Sierra is composed of granitic and metamorphic rocks of pre-Tertiary age. These rocks comprise the basement complex beneath the east side of the valley and the project site. The eastern San Joaquin Valley is dominated by extensive alluvial fans and floodplains developed by rivers entering the valley from the Sierra Nevada. These broad, gently sloping, alluvial fans consist predominately of gravel, sand, and silt. The Cottonwood Creek area on the project site is such an alluvial fan.

Southern Area

The Southern Area of the Project Site, west of Cottonwood Creek, consists of an upper stratigraphic unit composed of cemented or partially cemented pumice gravel/cobbles mixed with tuffaceous silica sands underlain by volcanic ash and arkosic sand/silts. According to the United States Department of Agriculture Soil Conservation Service (SCS), these soils are known as the Ramona and Rocklin Series sandy loam. The Rocklin Series sandy loam contains large proportions of pumice and occupies undulating to hilly, partly dissected, low terraces on 3 percent to 30 percent slopes. The Ramona Series generally consists of sands and silts which occupy gently sloping areas (0 percent to 8 percent slopes) or low terraces.

According to information obtained from previous investigations, five distinct rock units exist west of Cottonwood Creek (Krazan & Associates 1991). These rock units from top to bottom consist of the following:

1. **Cemented pumice Conglomerate (Mud Flow Deposits) -** sands, gravels and cobbles at or near the surface, ranging from approximately 30 to 70 feet thick.
2. **Volcanic Ash and Sand -** ranges in thickness from 5 to 50 feet.
3. **Clean Silica Ash -** ranges in thickness from 5 to 50 feet.
4. **Arkosic Sand (Lower Turlock Formation) -** an alluvial formation deposited fluvially upon the basement bedrock in isolated areas of the site.
5. **Grano-dioritic Bedrock (Granite) -** an intrusive igneous rock, ranging in quality from highly weathered (decomposed) in the shallow subsurface to only slightly weathered at increased depth. Typically exhibits moderate to high strength characteristics when only slightly weathered or intact.

Soils tests in the southern section indicate a negligible corrosion potential and a low expansion index. The Chalk Cliff area near Cottonwood Creek contains mudflow and ash deposits.

Central Area

The Central area of the site, according to the SCS, contains soils that consist of the Whitney and Rocklin Series sandy loam soils that are present in areas of 8 percent to 15 percent slopes. The rolling hills east of Cottonwood Creek consist of the Daulton Series, which are shallow fine sandy loam soils derived from metamorphosed sedimentary rocks with metamorphic rock outcrops on 30 percent to 45 percent slopes. These soils are generally underlain by metasedimentary rock (schist), which has also outcropped in numerous locations. Drilling operations found the point-of-refusal at depths of 5.6 to 15.2 below ground surface (bgs), which indicates the presence bedrock at these depths. Therefore, blasting may be required if ground surface is not rippable in some locations.

Northern Area

The Northern area of the site, according to the SCS, includes soils that consist of the Ahwahnee and Vista Series of rocky sandy loam soils and are present in areas of 8 percent to 75 percent slopes. The areas near Millerton Lake also consist of the Whitney Series, which are shallow fine sandy loam soils that have developed in weakly consolidated sedimentary materials derived chiefly from granitic rocks. These soils are present on 3 percent to 8 percent slopes and are generally underlain by granitic basement rock (granite), which has also outcropped in numerous locations. Bedrock was uncovered at depths of approximately 1 foot bgs, and hilltop areas experienced drilling resistance at depths of 2.5 to 8.25 feet bgs. This indicates that blasting may be necessary to provide buildable space in some portions of the area. The RMAP EIR identifies an ancient landslide generally following the contour of Millerton Lake in this Northern Area, and cites the potential for landslides in the NFV-1 site. However, the Geotechnical Investigation prepared for this project found no evidence of such landslides and suggests that grading completed over 30 years ago as part of a proposed golf course was misinterpreted.

Seismicity

According to the RMAP EIR, the project site is in a low area of seismicity and no faults are known to cross the subject site. Major active faults are found in all directions from the site, and the greatest ground shaking event on record has been the 1872 Owens Valley earthquake and the 1906 San Francisco earthquake that were equivalent to a VII on the Modified Mercalli Intensity Scale. This is also the same level for the greatest groundshaking event that can be expected to occur on the site which would probably be the result of movement along the northern segment of the San Andreas Fault or the segment of the Sierra Nevada Fault in the Owens Valley Region.

Groundwater

The Millerton Lake area is generally underlain by groundwater occurring in fractured granitic rock. Groundwater was encountered at 10 and 14 feet bgs near Cottonwood Creek and near the site of the proposed sewer treatment facility at the western boundary of the southern portion of the property.

Regulatory Setting

The Madera County General Plan and the RMAP contain policies regarding seismic hazards with the goal to minimize the loss of life, injury, and property damage due to seismic and geologic hazards.

The Madera General Plan provides the following policies:

Policy #	General Land Use
1.A.5	The County shall permit only low-intensity forms of development in areas with sensitive environmental resources or where natural or human-caused hazards are likely to pose a significant threat to health, safety, or property.
Policy #	**Residential Land Use**
1.C.7	The County shall require residential project design to reflect and consider natural features, noise exposure of residents, circulation, access, and the relationship of the project to surrounding uses. Residential densities and lot patterns will be determined by these and other factors. As a result, the maximum density specified by the General Plan designations or zoning for a given parcel of land may not be realized.
Policy #	**Geologic Resources**
5.G.1	The County shall protect unique geologic resources from incompatible development.
Policy #	**Health and Safety**
6.A.1	The County shall require the preparation of a soils engineering and geologic-seismic analysis prior to permitting development in areas prone to geologic or seismic hazards (i.e. ground-shaking, landslides, liquefaction, critically expansive soils).
6.A.2	In landslide hazard areas, the County shall prohibit avoidable alteration of land in a manner that could increase the hazard, including concentration of water through drainage, irrigation, or septic systems; removal of vegetative cover; and steepening of slopes and undercutting the bases of slopes. Areas of known landslides should be designated for open space.
6.A.3	The County shall limit development in areas of steep or unstable slopes to minimize hazards from landslides. Development will be prohibited in areas with slopes of 30 percent or more unless it can be demonstrated by a registered engineer or registered engineering geologist that such development will not present a public safety hazard.
Policy #	**Visual and Scenic Resources**
1.H.2.	The County shall require that new development incorporate sound soil conservation practices and minimize land alterations. Land alterations should comply with the following guidelines: a. Limit cuts and fills; b. Limit grading to the smallest practical area of land; c. Limit land exposure to the shortest practical amount of time; d. Replant graded areas to ensure establishment of plant cover before the next rainy season; e. Create grading contours that blend with the natural contours on site or look like contours that would naturally occur; and f. Prohibit overgrazing.
1.H.3	The County shall require that new development on hillsides employ design, construction, and maintenance techniques that: a. Preserve and enhance the hillsides; b. Ensure that development near or on portions of hillsides do not cause or worsen natural hazards such as erosion, sedimentation, fire, or water quality concerns; c. Include erosion and sediment control measures including temporary vegetation sufficient to stabilize disturbed areas; d. Minimize risk to life and property from slope failure, landslides, and flooding; and e. Maintain the character and visual quality of the hillside.

The RMAP provides the following policies:

Policy #	Community Design
2.1	Development planning in hillside areas should conform to the unique natural setting of each area and site, retaining or restoring the character of existing landforms and preserving significant vegetation.
2.2	Development planned for the river bluff top areas should be controlled by slope stability and geotechnical considerations.
Policy #	**Open Space**
1.3	Natural drainage courses should be preserved where feasible and integrated into project design. Development, including recreational projects such as golf courses, should cause minimal change to water courses and significant areas of native vegetation.
2.1	Incorporate topographic features and drainage courses into buffer/transition zones between land uses.
3.4	Preserve and incorporate natural features along with supporting artificial and recreational features into development site design such that those features can serve as a buffer for the river corridor.
Policy #	**Conservation and Safety**
1.1	Protect natural features such as the Bluff face and unique land forms through restrictive land use regulations.
1.2	Protect natural features such as the Bluff face and unique land forms through restrictive land use regulations.
1.3	Encourage the clustering of development to reduce topographic change.
1.4	Require all development to meet grading standards designed to minimize topographic change and help it blend into the natural surroundings.
1.5	Require contour grading techniques utilizing rounded forms that complement and blend into existing natural terrain.
2.1	Development of ridges, hilltops and knolls should be designed to achieve blending of new development with the natural terrain.
7.1	Require careful site specific evaluations based on detailed surface and subsurface geotechnical investigations in areas of potential landslide susceptibility.

Title 14 of the Madera County Code adopts the Uniform Building Code (UBC) and regulates grading practices to ensure the stability of slopes and foundations and to minimize erosion throughout the grading, construction and occupation of a development project.

State

State Uniform Building Code

The California Code of Regulations, Title 24 (California Building Standards Code) applies to all applications for residential building permits. The state UBC consists of 11 parts that contain administrative regulations of the California Building Standards Commission and regulations of all state agencies that implement or enforce building standards. Local agencies must ensure that development in their jurisdictions complies with guidelines contained in the code. Cities and counties can; however, adopt building standards beyond those provided in the state UBC.

Alquist-Priolo Earthquake Fault Zoning Act

The purpose of the Alquist-Priolo Earthquake Fault Zoning Act, passed in December 1972, is to regulate development near active faults, with the specific intention of mitigating the hazard of surface fault rupture on human occupancy structures. Local government agencies are mandated by the act to require site-specific geologic investigations for proposed projects contained within a designated Alquist-Priolo Earthquake Fault Zone area. Such investigations typically include subsurface trenching to determine the presence of faulting. The most recent movements on any observed fault are then determined by appropriate age-dating methods. An "active fault" is defined as a fault that has experienced movement in the last 11,000 years (Holocene Epoch).

Under the act, the California State Geologist identifies areas in the state that are at risk from surface fault rupture. The main purpose of the act is to prevent construction of buildings used for human occupancy where traces of active faults are evident on the earth's surface. Fault rupture generally occurs within 50 feet of an active fault line and is limited to the immediate area of the fault zone where the fault breaks along the surface. Such a rupture could potentially displace and/or deform the ground surface. Accordingly, the California Geologic Survey provides the following guidance: "If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (generally 50 feet)." (California Department of Mines and Geology 2004.) The act requires that portions of the northern part of the proposed project site be considered within the Alquist-Priolo Earthquake Fault Zone. Setbacks from the active fault traces are recommended in the geologic report.

Seismic Hazards Mapping Act of 1990

The California State Seismic Hazards Mapping Act of 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides. Through it, the state has created mandates to incorporate site-specific geotechnical hazard investigations as part of the local construction permit approval process. It provides a mechanism to identify when provisions beyond standard building codes are necessary to ensure safe development and to reduce future losses. Although the act is chiefly aimed at reducing earthquake-related losses, its provisions for slope stability can be applied broadly.

Federal

The Federal Emergency Management Agency (FEMA) prepared a report in 1991 titled Building Seismic Safety Council, NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings; FEMA Report 222, that provides seismic zonation maps for Madera County.

5.6.3 - Thresholds of Significance

According to Appendix G of the California Environmental Quality Act (CEQA) the project is considered to have a significant impact on the environment if it would:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

   i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

   ii. Strong seismic ground shaking?

   iii. Seismic-related ground failure, including liquefaction?

   iv. Landslides?

b) Result in substantial soil erosion or the loss of topsoil?

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater

5.6.4 - Project Impacts

Impact 5.6-1:	**Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:** **• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42** **• Strong seismic ground shaking** **• Seismic-related ground failure, including liquefaction, and** **• Landslides** **(Threshold a.)**

The proposed NFV-1 Specific Plan development would locate residents, occupants of commercial facilities, all structures and facilities at risk of moderate groundshaking in the event of a moderate to major earthquake on local or regional faults similar to the risk experienced by other development in this part of Madera County and Fresno County. Although the level of seismic risk is not unusual for the region, property damage and injuries could result.

According to the Preliminary Geotechnical Feasibility Investigation by Technicon Engineering, Inc., the project site is not located in an area prone to strong seismic groundshaking, is not located on a known earthquake fault, and does not contain soil prone to liquefaction or seismic-induced settlement. Although the depth to groundwater in the Southern Area is less than 50 feet, the soils are predominantly medium to very dense. Groundwater was not encountered during exploration of the Central and Northern areas. Additionally, the enforcement of the UBC and the County's grading

standards by the County of Madera will ensure that all construction adheres to standards to minimize damage to structure due to earthquakes. Structures in Madera County are required to be constructed to withstand an earthquake intensity of VIII or better, which exceeds the maximum expected earthquake to be experienced on the site. Adherence to the specifications of the UBC applicable to the project area would minimize structural damage resulting from potential seismic activity. Project site grading, and cut and fill activity would be subject to conditions of a County Grading Permit. Prior to issuance of a grading permit, the applicant would be required to demonstrate slope stability for any artificial slopes created. Impacts related to seismic rupture, shaking and ground failure due to liquefaction are less than significant.

However, the slopes with grades of more than 25 percent may have the potential to fail due to seismic events. *This is a potentially significant impact and mitigation is provided.*

Impact 5.6-2: Result in substantial soil erosion or the loss of topsoil. (Threshold b.)

Development of the proposed project would require excavation, grading and other construction operations. Slope and soil disturbance could result in soil erosion. This is considered a potentially significant impact.

Although development in the NFV-1 project would include re-vegetation and landscaping that would eventually decrease erosion of soils over the life of the project, the disruption of surface soils through excavation, cut and fill, and grading associated with project construction would result in erosion and sedimentation impacts.

Given the size of the proposed NFV-1 project (greater than 5 acres) a National Pollution Discharge Elimination System (NPDES) General Construction Activities permit will be required to minimize erosion and control run-off. A Storm Water Pollution Prevention Plan to implement Best Available Technology (BAT) and Best Conventional Pollutant Control Technology (BCT) is required to reduce or eliminate storm water pollution. No numeric effluent limitations for storm water discharges from construction activities have been established.

To minimize soil erosion and sedimentation building pads would be designed to emulate existing topography and be shaped to conform to the character of the topography. Interior roads would be aligned along existing topographic contours and cut slopes would be rounded at the top and toe to meet natural grade. The maximum final slope angle for cut and fill slopes would be 2:1, except for dense silt sands that would be limited for 1.5:1.

If excavation occurs during the rainy season, storm runoff would be regulated by temporary onsite detention basins and multiple discharge points to natural drainages and wetlands. Stockpiles of loose material would be covered and runoff would be diverted away from exposed soil materials. Sediment basin/traps would be designed with efficiency to trap the modal size class of soil particles on the site and would be located and operated to prevent off-site sediment transport.

Temporary erosion control measures including the placement of properly trenched and staked silt fences and straw bales along the base of disturbed slopes and on drainage ways at the downstream site margins would be provided until perennial re-vegetation or landscaping is established and can prevent discharge of sediment into natural drainages.

Nevertheless, some areas of the site contain soil types such as silty sand, pumice, and volcanic ash that are susceptible to erosion during grading and construction. *This is a potentially significant impact, and mitigation is provided.*

Impact 5.6-3:	**Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction or collapse. (Threshold c.)**

According to the Geotechnical Investigation prepared for this project, several slope stability issues are evident on the site. Native soils in some areas between bedrock and outcroppings are soft or pliant and not suitable to support foundations. Some topsoil contains organics and other debris, and other areas contain shallow bedrock and require fill in order to support foundations. *Impacts are potentially significant, and mitigation is provided.*

Impact 5.6-4:	**Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property. (Threshold d.)**

According to the Geotechnical Investigation prepared for this project, the soils on the site are not subject to expansion. *Impacts are less than significant.*

Impact 5.6-5:	**Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. (Threshold e.)**

The project includes a sewage collection and treatment system onsite. However, septic tanks will be used in the Sierra Crest Neighborhood in the last phase of development. Prior to development in this northern area, site specific soils and percolation studies will be required to demonstrate the ability of these areas to accept septic tanks and leach fields. *Compliance with design recommendations of such investigations should reduce impacts to less than significant levels.*

Project Design Features

The NFV-1 Specific Plan contains objectives, policies and standards that address minimizing the development impact from grading of hills, knolls, and other geologic features. The policies contained in these standards require grading plans for proposed development, and minimizing grading to not exceed 2:1 (horizontal to vertical), and protection of public safety in the design of development where hillside grading is proposed. Specific standards in the NFV-1 Hilltop Grading Manual are recommended based on the percent of slope of the natural landform. Other design requirements are displayed that minimize impact in the contouring of natural landforms. The proposed Specific Plan Design Standards also provide for "bluff" development standards that provide for definitions of various geologic structures in the bluff area and require specific setbacks from the edge of the bluff.

All development in the 100 year flood plain for Cottonwood Creek is prohibited. These standards to be adopted by Madera County for this project will serve to *reduce potentially significant geologic and soils impacts*.

5.6.5 - Cumulative Impacts

On a regional basis, cumulative development within the eastern portion of the County of Madera would increase the number of people working and living within structures who would be exposed to hazards associated with seismic activity. The risk associated with this hazard can be reduced to less than significant levels through implementation of seismic safety standards, and specific building design measures.

5.6.6 - Mitigation Measures

Rio Mesa Area Plan and EIR

The following policies and mitigation measures from the RMAP and RMAP are identified to mitigate potential direct and cumulative impacts from soils, seismic and geologic hazards.

1. Special consideration should be given to the design process of prominent ridgelines (skyline ridges without mountain backdrops), bluff faces and unique landforms.
2. Encourage the clustering of development to reduce topographic change.
3. Require all development to meet grading standards designed to minimize topographic change and help it blend into the natural surroundings.
4. Require contour grading techniques utilizing rounded forms that complement and blend into existing natural terrain.
5. Development of ridges, hilltops, and knolls should be designed to achieve blending of new development with the natural terrain.
6. Require careful site specific evaluations based on detailed surface and subsurface geotechnical investigations in areas of potential landslide susceptibility.
7. A slope stability analysis should be performed as part of subsequent precise development plan approvals on the bluff area to determine necessary building setbacks from the edge line of the bluffs.
8. A slope stability analysis should be performed for the potential landslide and scarp areas.
9. A geotechnical investigation should be conducted as part of subsequent precise development plan approvals to determine if liquefiable soils exist within 50 feet of the ground surface. If potential for liquefaction is found, the recommendations of the subsequent geotechnical report should be implemented to minimize the possible effects of liquefaction.
10. An investigation of the lineaments found on the property should be conducted as part of subsequent precise development plan approvals to determine if they are faults or sedimentary

features. If they are related to faulting, then the geometric characteristics and relative activity of each should be determined in order to establish appropriate structural setbacks.

These measures are implemented by the NFV-1 Specific Plan and the additional project-specific mitigation measures below.

Additional Mitigation Measures

The applicant, developer, and/or successors-in-interest shall be responsible for the following mitigation measures:

GS-1 Specific recommendations have been included by the geotechnical engineer. These recommendations shall be implemented along with Madera County construction standards. The recommendations are included in Appendix E, Geology/Hazards, of this Draft EIR

GS-2 A detailed site-specific Geotechnical Engineering Investigation shall be conducted for each phase of the proposed development. Prior to the issuance of Grading or Building Permit, grading and/or construction plans shall minimally meet design and construction for the appropriate seismic zone requirements of the Uniform Building Code adopted by Madera County at the time the Grading or Building Permit is issued.

GS-3 Compressible surficial materials unsuitable for construction shall be removed or over-excavated prior to construction in accordance with the standards of the Madera County

GS-4 As part of the site grading and prior to the commencement of building construction, unconsolidated fill materials, and organic rich soils shall be excavated and shall be replaced with engineered fill.

GS-5 Obtain the required NPDES permit and prepare and implement the required Best Available Technology (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate storm water pollution during construction.

GS-6 Develop a project specific grading plan for new proposed development, to be approved by the Madera County Engineer which incorporates, but is not limited to, the following:

- Ground cover removal onsite shall minimize erosive effects, and shall be replaced as soon as possible after construction operations.
- Temporary mulching, seeding, or other suitable stabilization measures shall be used to protect exposed areas during construction activities.

- Exposed earth surfaces shall be watered by the contractor as required to control dust. Tarpaulins or similar covers shall be used on haul trucks to reduce fugitive dust emissions.

GS-7 Prior to the final phase development in the proposed Sierra Crest Neighborhood, the applicant/developer shall submit soils investigations and design recommendations for sites proposed for septic tanks and leach fields. Such investigations shall demonstrate the ability of these sites to accept proposed septic systems, to the satisfaction of the Madera County Environmental Health Department.

5.6.7 - Level of Significance After Mitigation

The proposed mitigation measures will be implemented prior to the issuance of grading and building permits. Potential significant impacts related to landslides due to seismic events or other conditions, as well as unstable soil conditions will be reduced to levels less than significant through the use of appropriate design measures. Potential significant impacts related to erosion or loss of topsoil will be mitigated through the use of best practices mandated by the NPDES program as administered by the County of Madera Engineering Department. All impacts will be less than significant after mitigation.