The development could have proposed substantially less grading and utilize the natural contours of the land and habitat to design the development. Thus the development will not be attractive or be "environmental". The proposed land use is incompatible with current zoning regulations and land use classifications. The land use is also incompatible with surrounding land uses as this development will eliminate the rural atmosphere that is found in the area and will not allow the property to be used as equestrian estates. 149-24

The applicant states as another objective, "To locate the residential development in proximity to existing infrastructure and services where possible". The residential development is far away from services and stores that residents will need to utilize. This will require numerous vehicle trips to obtain those services and acquire goods required by the residents. Additionally, the area is not served by public transportation which will handicap the residents from eliminating vehicle trips from the project. Unless the applicant intends further development including development of commercial property on or nearby the site, the services and goods that residents will need are not nearby where residents can walk or take public transportation. 149-25

The applicant states as another objective, "To provide safe, efficient and aesthetically attractive streets in the residential development with convenient connections to adjoining arterial and freeways, while minimizing traffic impacts on existing residential neighborhoods". The applicant has stated no plans for street landscaping and street design for aesthetics that is described in the EIR. It is misleading to believe that the streets will be aesthetically attractive with no landscaping plan in place. The development will have significant impacts on local traffic that will not be mitigated. We discuss those later in the traffic section of our comments. 149-26

The applicant states as another objective, "To minimize impacts to important natural landforms and significant natural resources". The development will grade up to 5.5 million cubic yards of fill. This is more than any alternative that is described in the EIR or could be done instead being sensitive to land forms and natural contours. This development seems to maximize the impacts to the natural landforms, because the project's terrain is not suitable for the development that is proposed. The development when looking at the visual simulations in the EIR will cut many ridges and peaks, fill canyons, and destroy many other natural landforms found on the project site. This development eliminates many significant natural resources such as rare habitats, rare plants, and rare animals. 149-27

The last goal that the applicant states is, "To develop a residential project on the project site that is financially viable and thereby permits (1) the donation or dedication of all of the project site located outside the Development Areas to an appropriate public agency or nonprofit entity and (2) the development of public and private equestrian and other recreational amenities on the project site". The property owner is not guaranteed a right to a financially viable project. The developer purchased the land knowing that it was subject to certain zoning restrictions, land use classifications, slope density ordinance, hillside protection ordinances, the Los Angeles General Plan and the local Community Plan. Those land use restrictions were in place when the land was purchased by the applicant. For the applicant to change all the above mentioned restrictions to build something that is not compatible with all those restrictions is a risk that the applicant has 149-28 taken. The applicant should have made a plan to have a financially viable project taking into account all the land restrictions that existed on the property at the time of purchase. The development will really not add to the recreational opportunities in the area as we further discuss in our comments on the recreation section. Financial viability of a project is not guaranteed by any law for purchases made for land speculation such as this project. 149-28

Also, if the Army Corps of Engineers is to use this document to determine the appropriateness of requiring a Section 404 permit or other approvals required regarding this development impacting the Waters of the United States, there must be a discussion of the size of the waters of the United States on the property, the location of these and how much of the Waters of the United States are expected to be destroyed, modified or impacted. 149-29

The EIR must include information pursuant to CEQA guideline Section 15124(d)(2), "If a public agency must make more than one decision on a project, all its decisions subject to CEQA should be listed, preferably in the order in which they will occur." The City of Los Angeles will make multiple decisions concerning this project. These decisions must be listed in the EIR according to CEQA guidelines. 149-30

The EIR must disclose the properties owned by the applicant. The listing the APNs would be the easiest way and most meaningful way to list the properties owned and impacted by the applicant. The EIR must disclose the underlying assumptions and estimates used in the engineering estimates of what will be graded to achieve a balanced on site grading project and the maximum grading impacts of the project. Engineering information in the EIR appears to be erroneous. The EIR must be redone to incorporate correct information. Also, the EIR must disclose information including maps of the lot and pad sizes of all lots that are proposed in both development areas. The EIR must discuss the current slope and slope after development and the allowed project under LAMC slope density ordinance. The project objectives must be changed or modified. 149-31

Section IV. A GEOLOGY AND SOILS

The EIR must discuss and recommend mitigation measures that need to taken to insure slope stability if the project area was inundated with precipitation and runoff from a 100 year flood, an event expected to occur once every hundred years. The EIR does not discuss flood or mudflow impacts in the proposed fill areas. This must be discussed in the EIR and mitigation measures must be discussed. 149-32

The hazards of mudflows, debris flows or landslides are real in hillside areas. They are of special concern in hillside areas that have been altered by development.

The United States Geological Survey describes these hazards on their website. We have included parts of their hazard description in our response.

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Comment Letter No. 149

Hazard Fact Sheet

The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on an over steepened slope is the primary reason for a landslide, there are other contributing factors:

- erosion by rivers, glaciers, or ocean waves create oversteepened slopes
- rock and soil slopes are weakened through saturation by snowmelt or heavy rains
- earthquakes create stresses that make weak slopes fail
- earthquakes of magnitude 4.0 and greater have been known to trigger landslides
- volcanic eruptions produce loose ash deposits, heavy rain, and debris flows
- excess weight from accumulation of rain or snow, stockpiling of rock or ore, from waste piles, or from man-made structures may stress weak slopes to failure and other structures

Slope material that becomes saturated with water may develop a debris flow or mud flow. The resulting slurry of rock and mud may pick up trees, houses, and cars, thus blocking bridges and tributaries causing flooding along its path. 149-32

Where do landslides occur?

Landslides occur in every state and U.S. territory. The Appalachian Mountains, the Rocky Mountains and the Pacific Coastal Ranges and some parts of Alaska and Hawaii have severe landslide problems. Any area composed of very weak or fractured materials resting on a steep slope can and will likely experience landslides.

Although the physical cause of many landslides cannot be removed, geologic investigations, good engineering practices, and effective enforcement of land-use management regulations can reduce landslide hazards.

USGS scientists continue to produce landslide susceptibility maps for many areas in the United States. In every state, USGS scientists monitor streamflow, noting changes in sediment load carried by rivers and streams that may result from landslides. Hydrologists with expertise in debris and mud flows are studying these hazards in volcanic regions.

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The United States Geological Survey gives some recommendations for those in hillside areas regarding dealing with landslides and debris flows.

If you live near steep hills

Before Intense Storms

- **Become familiar with the land around you**. Learn whether landslides or debris flows have occurred in your area by contacting local officials, state geological surveys or departments of natural resources, USGS maps, and university departments of geology. Slopes where landslides or debris flows have occurred in the past are likely to experience them in the future.
- **Support your local government** in efforts to develop and enforce land-use and building ordinances that regulate construction in areas susceptible to landslides and debris flows. Buildings should be located away from known landslides, debris flows, steep slopes, streams and rivers, intermittent-stream channels, and the mouths of mountain channels.
- **Watch the patterns of storm-water drainage** on slopes near your home, and note especially the places were runoff water converges, increasing flow over soil-covered slopes. **Watch the hillsides** around your home for any signs of land movement, such as small landslides or debris flows or progressively tilting trees.
- **Contact your local authorities** to learn about the emergency response and evacuation plans for your area, and **develop your own emergency plans** for your family and business. 149-32

During Intense Storms

- **Stay alert and stay awake!** Many landslide and debris flow fatalities occur when people are sleeping. Listen to a radio for warnings of intense rainfall. Be aware that **intense short bursts of rain may be particularly dangerous**, especially after longer periods of heavy rainfall and damp weather.
- **Listen for any unusual sounds** that might indicate moving debris, such as trees cracking or boulders knocking together. A trickle of flowing or falling mud or debris may precede larger landslides. If you are near a stream or channel, be alert for any sudden increase or decrease in water flow. Such changes may indicate landslide activity upstream, so **be prepared to move quickly**. Don't delay! Save yourself, not your belongings.
- If you are in areas susceptible to landslides and debris flows, **consider leaving if it is safe to do so**. If you remain at home, move to a part of the house farthest away from the source of the landslide or debris flows, such as an upper floor, but **keep an escape route open** should it become necessary to leave the house.
- **Be especially alert when driving**. Embankments along roadsides are particularly susceptible to landslides. Watch the road for **collapsed pavement, mud, fallen rocks**, and other indications of possible landslides or debris flows.

After Intense Storms

- **Keep looking** for signs that the land is moving. Landslides can occur **weeks or months** after intense storms.

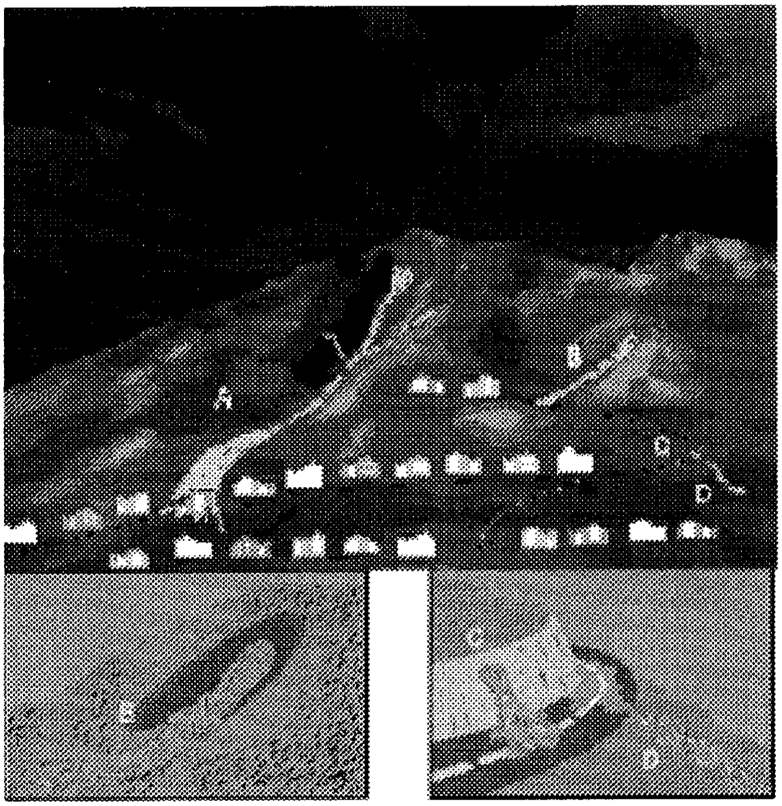
The USGS indicates that the debris flows and landslides have been more acute with weather phenomena like El Nino. From their publication "Debris Flow Hazards in the United States" the USGS have written, "Highly destructive debris flows occur in many areas across the United States. Hilly areas subject to prolonged, intense rainfall are particularly susceptible. **Areas throughout southern California are frequently beset by debris-flow problems,** and public agencies have expended vast resources on massive debris-protection systems for more than 65 years. The San Francisco Bay region also has experienced damaging debris-flow episodes throughout this century. El Niño, the ocean-warming phenomenon that can produce heavier-than-usual rainfall in certain areas of the United States, was associated with countless debris flows in Utah, when El Niño's increased rainfall effects were felt during the early 1980's.

Hilly areas of Hawaii experience much destruction from debris flows, as do areas of extreme northern California, Idaho, Oregon, and Washington. The mountains of Colorado and the Sierra Nevada of California have also experienced debris flows in areas receiving high rates of rainfall, rapid snowmelt, or a combination of these. As more people populate hilly areas of the west, the potential for damage from debris flows increases." 149-32

From the same USGS publication which is also referred to as U.S. Geological Survey Fact Sheet 176-97, we have put some other excerpts from this guide.

Hazardous Areas

Debris flows start on steep slopes-slopes steep enough to make walking difficult. Once started, however, debris flows can travel even over gently sloping ground. The most hazardous areas are canyon bottoms, stream channels, areas near the outlets of canyons, and slopes excavated for buildings and roads.



149-32

A: Canyon bottoms, stream channels, and areas near the outlets of canyons or channels are particularly hazardous. Multiple debris flows that start high in canyons commonly funnel into channels. There, they merge, gain volume, and travel long distances from their sources.

B: Debris flows commonly begin in swales (depressions) on steep slopes, making areas downslope from swales particularly hazardous.

C: Roadcuts and other altered or excavated areas of slopes are particularly susceptible to debris flows. Debris flows and other landslides onto roadways are common during rainstorms, and often occur during milder rainfall conditions than those needed for debris flows on natural slopes.

D: Areas where surface runoff is channeled, such as along roadways and below culverts, are common sites of debris flows and other landslides.

Wildfires and Debris Flows

Wildfires can also lead to destructive debris-flow activity. In July 1994, a severe wildfire swept Storm King Mountain west of Glenwood Springs, Colorado, denuding the slopes of vegetation. Heavy rains on the mountain in September resulted in numerous debris flows, one of which 149-33
blocked Interstate 70 and threatened to dam the Colorado River. A 3-mile length of the highway was inundated with tons of rock, mud, and burned trees. The closure of Interstate 70 imposed costly delays on this major transcontinental highway. Here, as in other areas, the USGS assisted in

analyzing the debris-flow threat and installing monitoring and warning systems to alert local safety officials when high-intensity rainfall occurred or debris flows passed through a susceptible canyon. Similar types of debris flows threaten transportation corridors and other development throughout the West in and near fire-ravaged hillsides."

Hazards of debris flow after fires have been well documented. A discussion of these must be included in the EIR and how the project may be impacted by such flows. We have included tables from studies done on debris flows or floods that have occurred after on set of wildfires. The effects of debris flow can be more acute after wildfires because resins in the burned vegetation melt into the soil, forming a waxy layer that impedes water absorption. Some areas that have experienced debris flows after wildfires were very small areas, similar to areas within and around the Canyon Hills project area. 149-33

Glendora, CA (1968)	**Basin Area (km^2)**	**Relief Ratio (%)**	**% Burn**	**Discharge (m^3/s) or Volume of Deposits (m^3)**	**Reported Rainfall Conditions**	**Reported Flow Process**
Glencoe Hts.	0.31	24	80	>10^6 m^3	Storm date: Jan 18-27, 1969, 33 mm in 1 hr at peak of storm (75+ year recurrence interval)	debris flow
Rainbow Drive	0.23	32	80	>10^6 m^3	Storm date: Jan 18-27, 1969, 33 mm in 1 hr at peak of storm (75+ year recurrence interval)	debris flow
East Hook Cyn	0.47	43	80	19,152 m^3	Storm date: Jan 18-27, 1969, 33 mm in 1 hr at peak of storm (75+ year recurrence interval)	debris flow
East Hook Cyn	0.47	43	80	11,354 m^3	Event occurred during a storm from Feb 22-25, 1969	debris flow
Harrow Cyn	1.11	38	80	39,867 m^3	Storm date: Jan 18-27, 1969, 33 mm in 1 hr at peak of storm (75+ year recurrence interval)	debris flow
Harrow Cyn	1.11	38	80	8,235 m^3	Event occurred during a storm from Feb 22-25, 1969	debris flow
Englewild Cyn	1.04	24	80	34,048 m^3	Storm date: Jan 18-27, 1969, 33 mm in 1 hr at peak of storm (75+ year recurrence interval)	debris flow
Englewild Cyn	1.04	24	80	11,612 m^3	Event occurred during a storm from Feb 22-25, 1969	debris flow

Reference: **Scott (1971)**- Scott, K.M., 1971, Origin and Sedimentology of 1969 Debris Flows near Glendora, California: U.S. Geological Survey Professional Paper 750-C: C242-C247.

Hidden Springs, CA (1977)	**Basin Area (km^2)**	**Relief Ratio (%)**	**% Burn**	**Discharge (m^3/s) or Volume of Deposits (m^3)**	**Reported Rainfall Conditions**	**Reported Flow Process**
M.F. Mill Creek	12	8	100	255 m^3/s 300,000 m^3	Storm Date: February 9th, 1978, 250 mm rain in 24 hr	debris flow

Reference: **Wells (1987)** - Wells, H.G., 1987, The effects of fire on the generation of debris flows in southern California. *in* Debris Flows/Avalanches: Process, Recognition, and Mitigation, Costa JE, Wieczorek GF (eds): Geological Society of America, Reviews in Engineering Geology VII, pp. 105-114.

Sierra Madre, CA (1978)	**Basin Area (km²)**	**Relief Ratio (%)**	**% Burn**	**Discharge (m³/s) or Volume of Deposits (m³)**	**Reported Rainfall Conditions**	**Reported Flow Process**
Carter Canyon (Bailey Canyon)	0.31	?	100	600 m³/s	Storm Date: Nov. 11th, 1978	debris flow

Reference: **Wells (1981)**- Wells, H.G., 1981, Some Effects of Brushfires on Erosion Processes in coastal Southern California, *in* Davies TRH, Pearce AJ (eds): Erosion and sediment transport in Pacific Rim steeplands: International Association of Hydrological Sciences Publication 132, pp. 305-342.

***Wheeler Fire* Ventura Cty, CA (1985)**	**Basin Area (km²)**	**Relief Ratio (%)**	**% Burn**	**Discharge (m³/s) or Volume of Deposits (m³)**	**Reported Rainfall Conditions**	**Reported Flow Process**
North Fork of Matilija Creek	2.14	40	100	550 m³	Storm Date: Jan. 30-31st, 1986, Max rainfall intensity: 20 mm/hr < 2 year recurrence interval	streamflow transported and deposited well-sorted gravel from tributaries and hillslopes

149-33

Reference: **Florsheim and others (1991)** - Florsheim, J.L., Keller, E.A., Best, D.W., 1991, Fluvial Sediment Transport in response to moderate storm flows following chaparral wildfire, Ventura County, southern California: Geological Society of America Bulletin, v. 103, p. 504-511.

Old Topanga Fire (1993)	**Basin Area (km²)**	**Relief Ratio (%)**	**% Burn**	**Discharge (m³/s) or Volume of Deposits (m³)**	**Reported Rainfall Conditions**	**Reported Flow Process**
Las Flores Creek	13	11	100	3,000 m³	Storm Date: Feb. 20th, 1994, 66 mm of rain fell at an average intensity of 25 mm/hr	mud and debris torrents collected sediment from tributaries

Reference: **Booker (1998)**- Booker, F.A., 1998, Landscape Management Response to Wildfires in California: MS Thesis, University of California, Berkeley, California, 436 p.

Laguna Beach Fire (1993)	**Basin Area (km²)**	**Relief Ratio (%)**	**% Burn**	**Discharge (m³/s) or Volume of Deposits (m³)**	**Reported Rainfall Conditions**	**Reported Flow Process**
Laguna Canyon	21.4	1	85	257,000 m³	Storm Date: Jan. 4th, 1995	flood
Laguna Canyon	21.4	1	85	463,000 m³	Storm Date: Jan 10th, 1995	flood

Reference: **Booker (1998)** - Booker, F.A., 1998, Landscape Management Response to Wildfires in California: MS Thesis, University of California, Berkeley, California, 436 p.

The EIR does not address debris flows, mudflows or landslides that might occur as a result of a severe weather phenomenon or natural disaster such as a wildfire. The storm that creates a debris flow problem does not even have to be a large storm. The San Bernardino flooding on December 25, 2003 was precipitated by a heavy localized rainfall. This was not unusual or uncommon during the winter in Southern California. The EIR must discuss the consequences of such problems and recommend suitable mitigation measures. If suitable mitigation measures cannot be recommended, then the impact of geology and soils on this project will remain significant. 149-34

The EIR must list the likely frequency that earthquakes of maximum magnitude from the different earthquake faults that may occur. The public information that the consultant derives his earthquake information from should indicate the frequency of a maximum magnitude earthquake on each fault.

The EIR must also incorporate in the mitigation measures, that any graded or exposed slope that would impact developed property to be stabilized in the event of the maximum expected earthquake to occur in the area. The California Department of Conservation Seismic Hazard Map shows that much if not most of the project area where land will be graded is subject to earthquake induced landslides. That is why it is imperative to incorporate these mitigation measures to reduce this known hazard below the threshold of significance. The EIR must also discuss if the bridges built in Project Area B across the La Tuna Canyon Wash will suffer impacts due to earthquakes or debris flow as they will be built in or near alluvium. 149-35

We question that the mitigation measures undertaken to prevent erosion will reduce erosion to a less than significant level if the construction period for infrastructure improvement and construction of homes takes a long time. There is a good chance that a Q50 storm will impact the area if the construction will occur over a 20-year period as we believe. That will mean that even if grading were only allowed in the dry season that there would be significant sediment and debris flow from the graded, open, and unstabilized areas that are not contained effectively. 149-36

There must be a discussion of pollutant runoff from this urban development. This includes runoff that might be produced by the households in the development and chemicals that will runoff from the project landscaping that is done in other areas. This may be a significant impact from the development despite the current mitigation recommendations. Additional mitigation measures may be required to minimize pollutant runoff. 149-37

We believe that as an additional mitigation measure, residences, retaining walls and other structures should be supported on footings founded either entirely in bedrock or in compacted fill. 149-38 Also, as another mitigation measure, construction work must not be performed during times of inclement weather. This includes times of moderate or severe rain, winds in excess of 20 miles per hour, or other weather conditions that would pose a hazard to the construction site, construction workers, or nearby residents. The construction site must have monitoring equipment to determine when winds exceed 20 miles per hour. 149-39