Fault Hazard Investigation and Mitigation Plan

for Tejon Ranch's Centennial Specific Plan, Los Angeles County, California

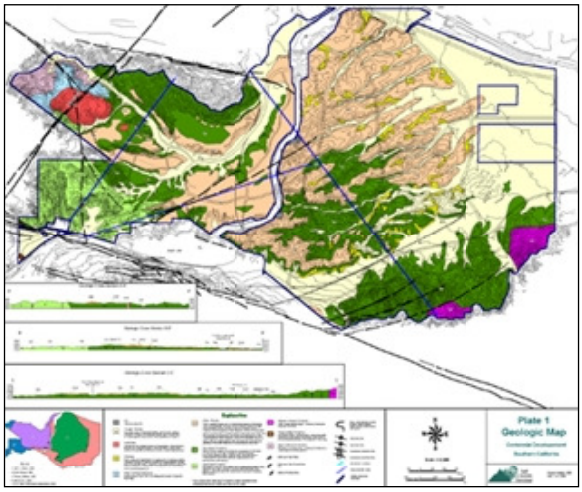
PROJECT DESCRIPTION

Panoramic view of the proposed Centennial Development site

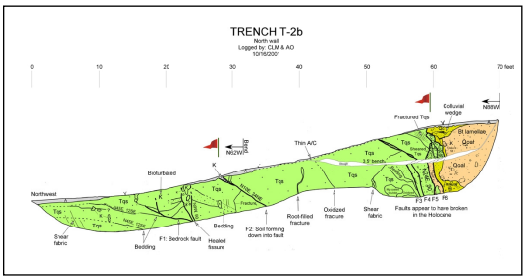
The 11,700-acre proposed Centennial development is located in western Antelope Valley, just south of Gorman, California, near the junction of the San Andreas and Garlock faults. Consisting of of 23,000 homes and 13 million square feet of commercial space, it will be one of the largest developments in the history of Los Angeles County. The San Andreas fault zone extends through the southwestern-most corner of the site, and several faults secondary to the main San Andreas fault had been mapped or inferred through the development area. *Earth Consultants International (ECI)* conducted a study of the area proposed to be developed to identify potentially active faults in the area and evaluate whether or not they pose a surface fault rupture hazard to future development of the property. If active faults were identified, we would provide mitigation measures to be incorporated into the design.

SOLUTION

ECI conducted a detailed review of aerial photographs and satellite imagery to look for landforms suggestive of active faulting. We reviewed regional and local studies conducted by others and compiled all photo lineaments and fault traces mapped or inferred by others onto a GIS-based map of the site. *ECI* geologists then conducted geologic mapping to verify the presence and location of these inferred faults and lineaments, and to identify potential trenching locations. From this effort we identified thirteen features that warranted further study. To do so, we excavated and logged a total of 27 trenches. Soils exposed in the trenches were sampled to estimate the age of the deposits and assess the most recent activity of the faults identified. Sediment samples were also collected for optically stimulated luminescence (OSL) dating to confirm our soil-based age estimates. From these field studies, *ECI* identified two faults as active. All other faults and fractures observed in the trenches were deemed not active. Structural setbacks for the two active faults were established. Since the trenches excavated for this study were thousands of feet apart, and the fault traces had to be extrapolated between trench locations, we recommended conservative structural setbacks that extend 100 feet out from traces of the faults. Subsequent studies could be conducted to constrain the width of these setback zones, if necessary. As a result of our study, we also identified some ridgeline locations where seismically induced fracturing (ridge top shattering) has occurred in the past. This hazard can be mitigated through generally common engineering solutions such as post-tensioned foundation slabs, over-excavation and replacement of building pads, and geofabric strengthening of slopes.



Geologic map of the proposed Centennial Development site


TRENCH T-2b
North wall
Logged by: CLM & AO
10/16/2007
0
10
20
30
40
50
60
70 feet
Fractured Tgs
Colluvial wedge
N65W
Dl lamellae
Qoal
Qoal
Thin A/C
N62W
Dip
Tgs
2.0 bends
Tgs
Tgs
Tgs