

APPENDIX A - LIQUEFACTION SUSCEPTIBILITY MAPPING APPROACH

What Is NEW About the Quaternary Mapping?

ABAG received funding from the U.S. Geological Survey (USGS) to work on liquefaction hazard mapping in a collaborative project with William Lettis & Associates, Inc. (WLA). As part of this collaborative effort, WLA received funding from USGS to develop new regionally consistent maps of Quaternary deposits (materials deposited in the last 1.6 million years) (Knudsen and others, 2000).

These maps are significantly different from the maps of Quaternary deposits ABAG and others have used in the past. (See, for example, Helley and Lajoie (1979) and Youd and Perkins (1987).) One of the principal differences is that the materials are mapped based more on the environment in which they have been deposited (basin, terrace, alluvial fan, etc.) and less on estimated grain size. Finally, much of the mapping is at a more detailed scale (including 1:24,000). The map is an interim product and will be revised as additional more detailed maps are prepared by WLA, the California Division of Mines and Geology (CDMG), and USGS.

The maps were digitized at USGS under the direction of Carl Wentworth. The maps are available in the form of a digital spatial database.

How Were the Liquefaction Susceptibility Maps Made?

Geologic map units in the digital Quaternary map were grouped into categories of similar susceptibility to liquefaction based on:

- ◆ typical ground water levels (for each map unit across all nine Bay Area counties),
- ◆ typical sediment properties; and
- ◆ liquefaction occurrences during past earthquakes.

A 1:1,000,000-scale version of the regional liquefaction susceptibility map is shown as a map plate on page 5 of *The REAL Dirt on Liquefaction* report. More detailed versions of this map appear on ABAG's Earthquake Program website at <http://quake.abag.ca.gov>.

Although the Quaternary geologic and liquefaction susceptibility maps are intended to provide baseline data for use in the preparation of the liquefaction zone maps developed by CDMG's Seismic Hazard Mapping Program, these maps are not intended to replace those zonation maps.

***Where Is More
Information Available?***

The maps are in the form of a digital geographic information (GIS) database that may be accessed at the USGS web site –
<http://geopubs.wr.usgs.gov/open-file/of00-444/>.

A 58-page report (Knudsen and others, 2000) containing the full documentation for the development of the file also can be accessed at that site.

References –

1. Helley, E.J., and Lajoie, K.R., 1979. *Geologic Map of the Flatlands Deposits of the San Francisco Bay Region*: U.S. Geological Survey Professional Paper 944, 88 pp.
2. Knudsen, K.L., Sowers, J.M., Witter, R.C., Wentworth, C.M., and Helley, E.J., 2000. *Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California*: U. S. Geological Survey Open-File Report 00-444. Digital Database (by Wentworth, C.M., Nicholson, R.S., Wright, H.M., and Brown, K.H.) Online Version 1.0.
3. Youd, T.L., and Perkins, J.B., 1987. *Map Showing Liquefaction Susceptibility of San Mateo County, California*: USGS Miscellaneous Investigation Series Map I-1257-G.