

A case study with an ethical dimension



Olive View Memorial Hospital, Sylmar, California
Destroyed with lives lost in the San Fernando Earthquake, 1971



Oakland

San Francisco

**San Andreas
Fault Zone**



Google Earth image



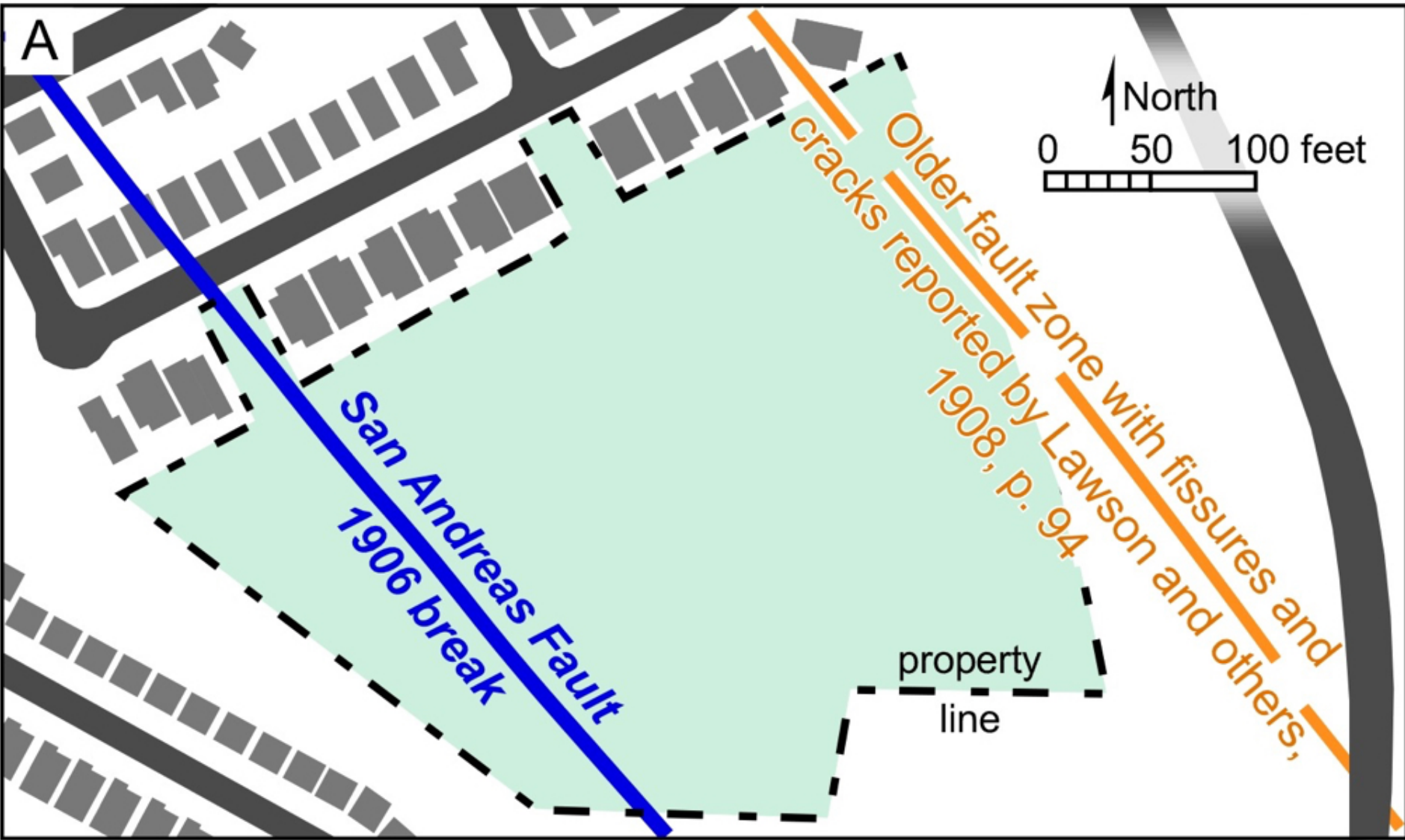
**San Andreas
Fault Zone**

Google Earth image

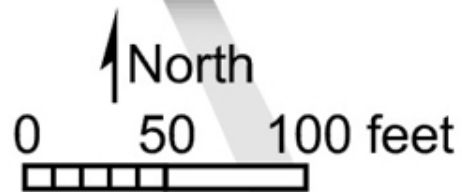


Google Earth image

July, 1993



B

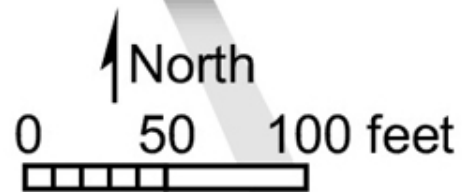


property
line

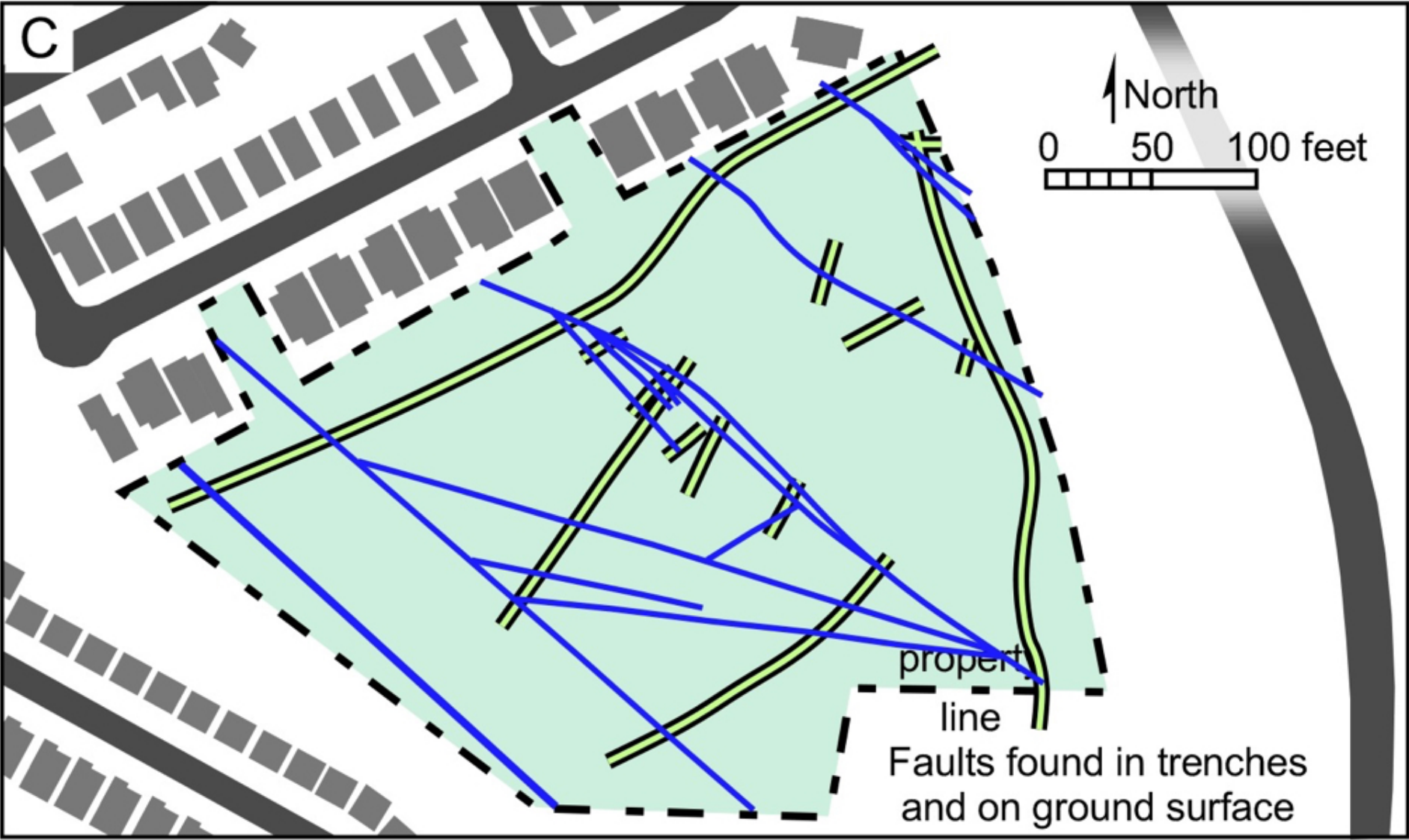
Paleoseismic trenches



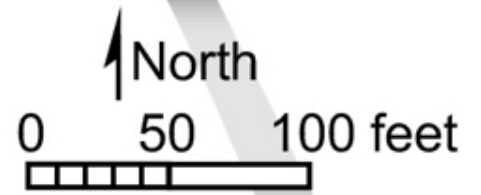
C



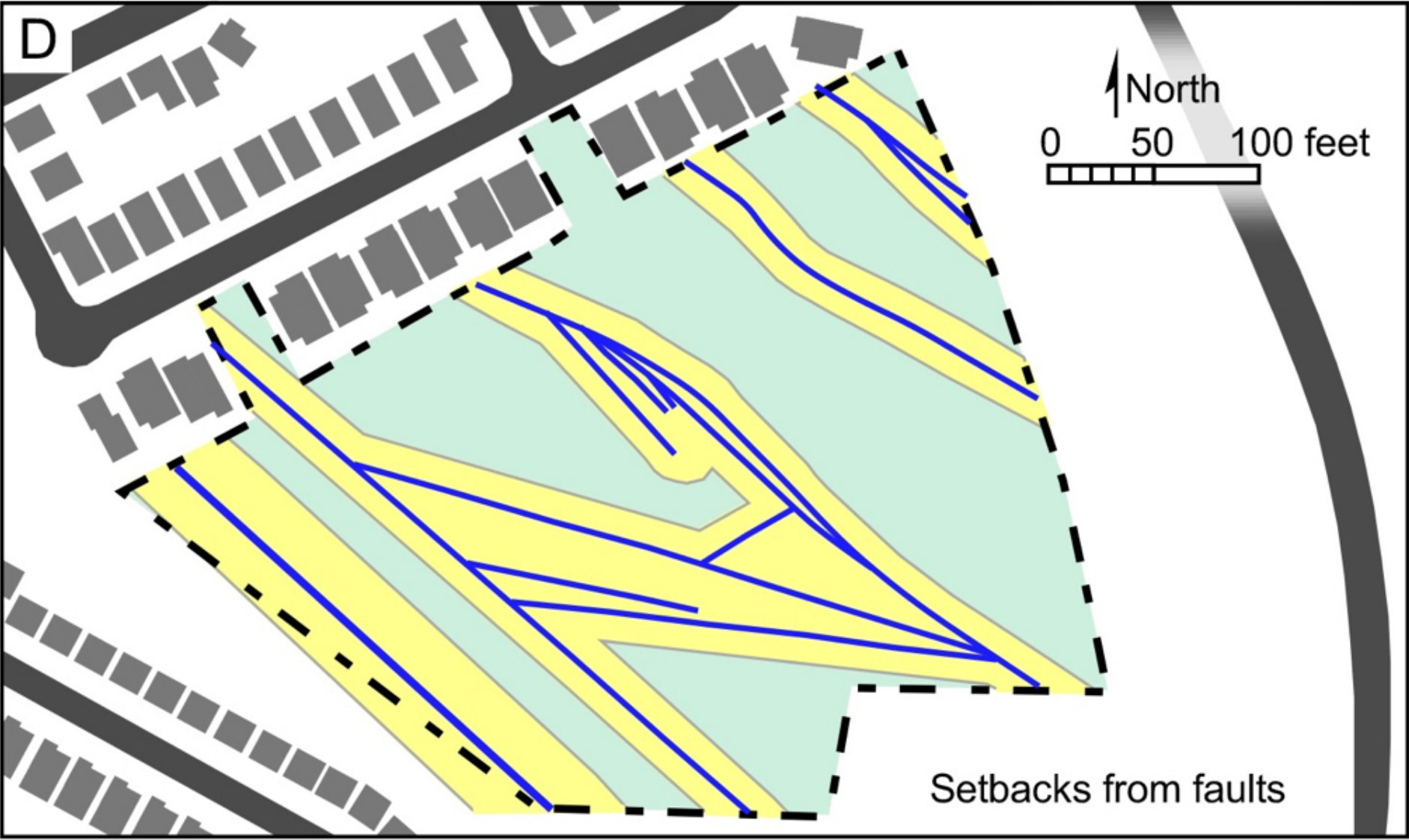
property
line
Faults found in trenches
and on ground surface



D



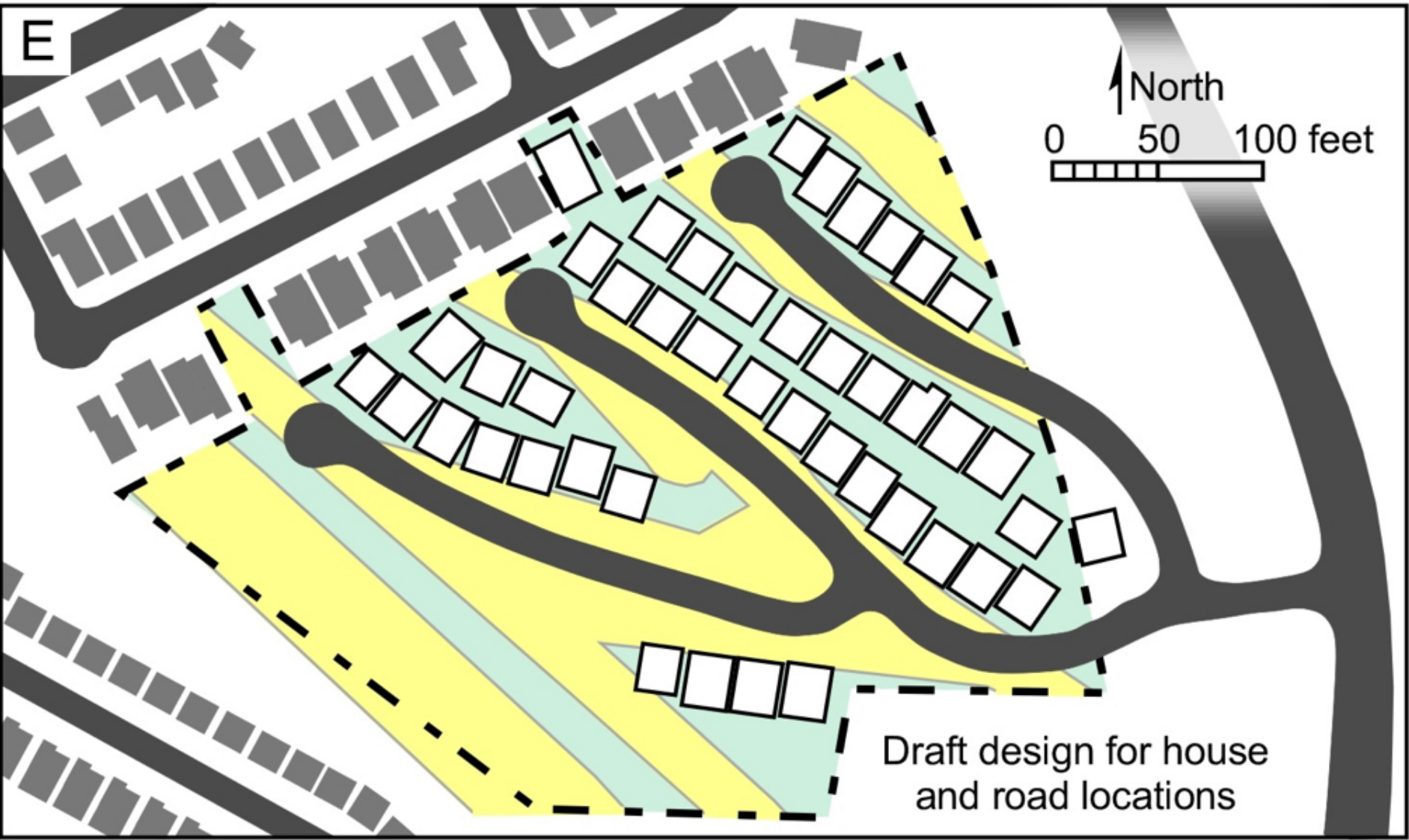
Setbacks from faults



E

North

0 50 100 feet



Draft design for house and road locations



Initial Discussion

South Napa earthquake,
24 August 2014

M 6, ~\$400 million damage



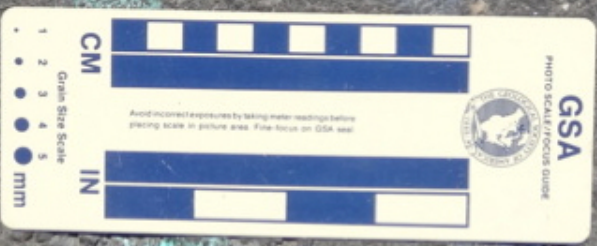
1
1-100
501
←

8519









Nepal (Gorkha) earthquake,
25 April 2015
M 7.8, >9,000 deaths,
~\$10 billion damage



Golden Gate Guest House

Bhaktapur, Nepal, 2015

1906 San Francisco earthquake

M 7.8, ~3,000 deaths

~\$10.5 billion damage (2015 \$)

**~12 feet of right-lateral offset
near development site**

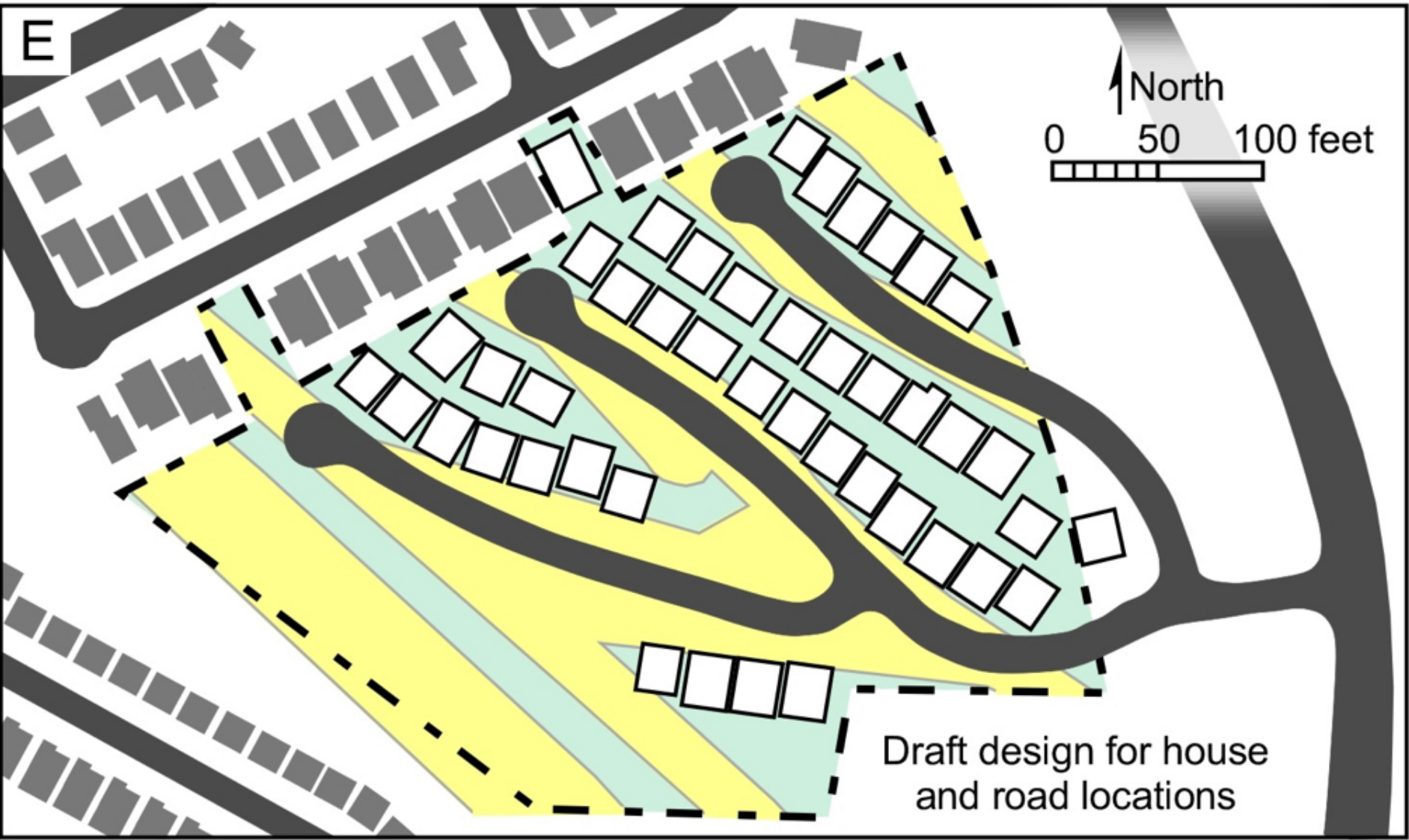


Photo by G.K. Gilbert, 1906

E

North

0 50 100 feet



Draft design for house and road locations

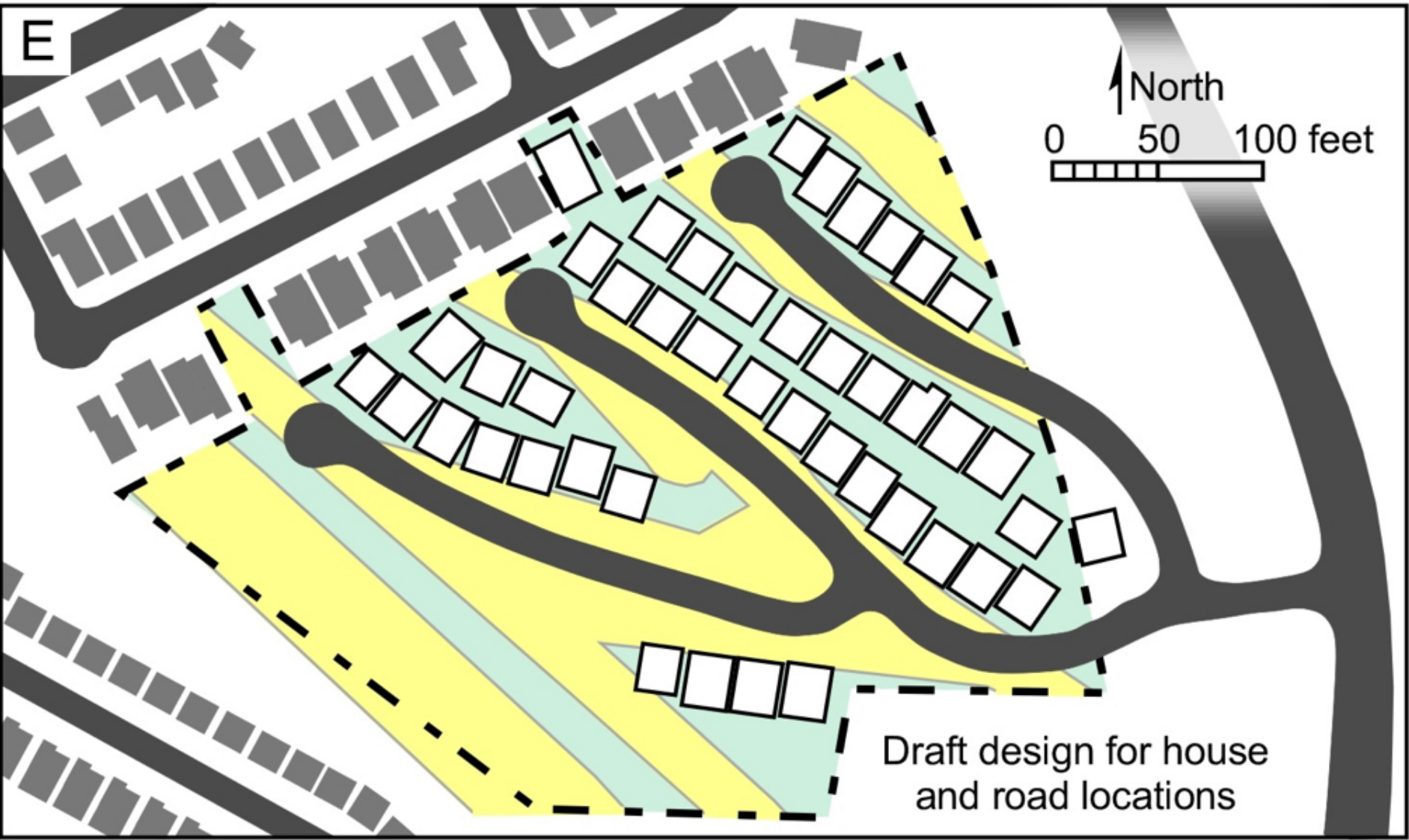


Second Discussion

E

North

0 50 100 feet



Draft design for house and road locations



Google Earth image

March, 2015









Final Discussion

Sources

Bryant, W.A., 2009, Alquist-Priolo Earthquake Fault Zoning Act: presentation at the Surface Fault Displacement Hazard Workshop at U.C. Berkeley, May 20-21, 2009; available via http://peer.berkeley.edu/events/2009/sfdc_workshop/Bryant_AP_PEER-2.pdf

Gilbert, G.K., 1906, The investigation of the San Francisco Earthquake: The Popular Science Monthly, v. 69, August; accessed via https://en.wikisource.org/wiki/Popular_Science_Monthly/Volume_69/August_1906/The_Investigation_of_the_San_Francisco_Earthquake or <http://www.popsoci.com/archive-viewer?id=uSUDAAAAMBAJ&pg=97&query=1906%20August>

Lawson, A.C., Gilbert, G.K., Reid, H.F., Branner, J.C., Fairbanks, H.W., Wood, J.F., Hayford, J.F., Baldwin, A.L., Omori, F., Leuschner, A.O., Davidson, G., Matthes, F.E., Anderson, R., Louderback, G.D., Holway, R.S., Eakle, A.S., Crandall, R., Hoffman, G.F., Warring, G.A., Hughes, E., Rogers, F.J., Baird, A., and others, 1908, The California earthquake of 1906 -- Report of the State Earthquake Investigation Commission: Washington, D.C., The Carnegie Institution, Publication No. 87, Volume 1, p. 94 of 192 p.; available online via http://publicationsonline.carnegiescience.edu/publications_online/earthquake_volume/