GUIDELINES FOR EVALUATING POTENTIAL SURFACE-FAULT RUPTURE WITHIN THE CITY OF BEVERLY HILLS, CALIFORNIA

(Revised September 2019)

As the decision-making (Lead) agency, the City of Beverly Hills has the duty to protect the health, safety, and welfare of the public by minimizing the potential adverse effects of surface-fault rupture. Accordingly, the City requires that the owners/developers (applicant) for proposed development of habitable structures of four or more occupants complete an appropriate "standard-of-practice" geological investigation to ensure that active faults do not underlie the site or, if present, are appropriately mitigated by avoidance (structural setbacks). All sites are different, and hence a wide variety of geological investigation techniques may be appropriate for a specific location. The following Guidelines and general information recognize this reality, and enumerate general procedures to assist the permit applicant and the consultants-of-record to conduct adequate and yet reasonable investigations consistent with maintenance of public health and safety.

1. An “active fault” is currently defined by the California Geological Survey (CGS) as one having surface or near-surface ground rupture within the last ~11,700 years, regardless of recurrence interval or amount of displacement per event (CGS, 2018a). Further, new CGS investigation criteria now state that “faults within a formally designated Earthquake Fault Zone (EFZ) are presumed to be active until determined otherwise” (CGS, 2018a, p. 27). The City follows these definitions and investigation criteria, but recognizes that in certain situations, on a site-specific basis, a “reduced” setback zone may be considered if accompanied by well documented engineering mitigation. If appropriate this option requires “above-average” site-specific technical documentation that should be discussed with and accepted by the City Technical Reviewer.

2. Fault-rupture investigations must meet current geologic standards-of-practice. Such practice changes over time. It is therefore the duty of the geologic consultants to keep abreast of and to employ the latest investigation techniques. Many such techniques are provided in CGS Note 49 “Guidelines for Evaluating the Hazard of Surface Fault Rupture;” a document that is periodically revised and readily available via the CGS website. Important: Both the Applicant and the Consultants-of-Record are strongly urged to obtain, review, understand and comply with the recommended fault-investigation
procedures spelled out in the latest revision of CGS Publication 42 (CGS, 2018a). At present, the CGS has designated the “Santa Monica Fault Zone” and the “Hollywood Fault Zone” as EFZs (CGS, 2018b). Additionally, current CGS mapping projects the Inglewood and West Pico EFZs directly into the City (CGS, 2018b [Fault Evaluation Report]). All relevant CGS documents are readily available on the CGS website. Thus, in accordance with professional standards-of-practice and for their specific project, the Consultants should also evaluate the possible impact of all mapped and inferred faults that may reasonably affect the property of interest. The Consultants are thus urged to be “proactive” in their analyses, rather than rely solely on existing maps, which are periodically updated. Seldom does the CGS remove “active faults” from EGZ maps, but new ones are frequently added based mainly on seismic activity and new investigations.

3 Projects outside present EFZ’s also require suitable investigations in conformance with the City’s duty to assure public health and safety from the potential of surface rupture. Heretofore, active faults within the City were not previously documented and thus warranted for inclusion into an EFZ. Now, however, several new investigations provide technical information to verify or negate previously inferred fault impact. Although site-specific trenching is currently not required for projects outside present, CGS-designated EFZ’s, the Consultants-of-Record should prepare a suitable investigation plan for submission to, and discussion with, the City’s designated Technical Reviewer.

4. Well documented trenches of sufficient length and depth are currently regarded as the most useful indicator of potential fault presence and relative activity. Trenching is the “standard” and is a general requirement in Beverly Hills and in adjacent jurisdictions. Presumably, trench locations will “shadow” faults in existing EFZ’s, but also will consider other EFZ faults reasonably projected into the City (CGS, 2018b). Such subsurface exploration may also entail emplacement, collection and interpretation of continuous cores, advancement and interpretation of cone penetrometer tests (CPT), and – if appropriate – geophysical surveys. Trench depth and number of cores or applicability of other exploratory techniques will vary from site to site, and thus no specific procedures are specified other than the requirement to carry out standard-of-practice investigations, which invariably change with time and place. The applicant’s (owner/developer) geological consultants should be aware of and employ appropriate investigation techniques, many of which are spelled out in CGS Note 49 and revised Special Publication 42 (2018a), both available on the CGS website.

The City recognizes that trenching may be spatially constrained in highly urbanized areas and that, for safety, only closely spaced CPTs and continuous cores might be appropriate for the initial investigation. If appropriate for a particular site, the Consultants may thus wish to “emulate a deep trench” by emplacing and downhole logging closely spaced bucket-auger borings. These are particularly practical when the likely Pleistocene-Holocene boundary is more than ~20-ft below ground surface. Recent investigations show that bucket-auger exposures may reveal vertical to near-vertical faults “missed” in previous CPT and continuous-core stratigraphic correlations.
In lieu of site trenching or bucket-auger logging, the Consultants and Permit Applicant may opt to wait until building demolition and therefore exposure of underlying sediments amenable to trenching or other means to expose the Pleistocene-Holocene boundary. Therefore, based on the permit applicant’s request and on technical justification, the consultants’ preliminary report can be submitted for potential “Recommendation for Conditional Acceptance” until lot clearance is followed by on-site trench(es) or detailed geological documentation of foundation cuts. Should this option be contemplated, the applicant’s geological consultants should so discuss with the City reviewer.

5. Additions or substantial modifications to existing habitable structures may require fault-activity investigations, depending mainly on the extent (size) of the proposed changes. Specific information about investigation procedures is provided in the City “Policy & Procedure” document available online or at the Community Development Department.

6. The geological investigation and related report(s) are to be performed, and signed, by a Professional Geologist (PG) licensed in the State of California. Specialists in numeric, relative, or other fault and sediment-dating techniques are expected to substantiate their investigation methods and conclusions in one or more Appendix reports as needed.

7. For trench and bucket-auger exposures, continuous cores and other site-specific geologic data, applicants’ consultants should request field observations by the City reviewer for identifying possible technical issues early in the investigation. The City, as Lead Agency, has the responsibility to assess whether or not the Consultant’s report(s) comply with current standard-of-practice, fault investigations.

8. In accordance with City regulations, the designated reviewer will commence communications with the applicant and consultant, upon City receipt of review fees and formal authorization by a designated Building Official.

It is strongly recommended that the applicant’s geological consultants meet with the City reviewer to discuss the proposed investigation plan(s). Consultant communication with the reviewer is encouraged throughout the investigation, primarily to avoid or reduce any problems that may arise.

9. The applicant(s), through the geological consultant, will ultimately submit a formal report to the City Reviewer that describes the investigation procedures and technical conclusions. The reviewer will then comment on the report and likely meet with the consultant(s) to resolve any issues. The reviewer will recommend “acceptance” when the report complies with the City’s requirements. As requested, the reviewer will also respond to the consultants’ technical questions during the entire review process.

The City requires that the Consultants-of-Record submit two “hard copies” and an electronic copy (flash drive) of the final report accompanied by the Technical Reviewer’s “Recommendation for Acceptance of Investigation and Report.” The City then typically
requires approximately one week thereafter to verify that all appropriate fees have been paid prior to formal issuance of “Approval of Investigation and Report.” As required by law, the City submits the Consultant’s report to the CGS where it inherently becomes a public document available for download by any interested party. As appropriate, Consultants should review these documents when preparing their proposed investigation plans.

10. These Guidelines apply only to investigation of potential surface-fault rupture. Requirements to investigate, identify and mitigate other possible geological or geotechnical hazards, such as high seismic accelerations, liquefaction and related ground deformation, or landslides and mudflows, are currently subsumed within the latest California Building Codes and thus subject to review by City officials or by a designated external peer reviewer. These Guidelines may be subject to change based on acquisition of new data and on local experience. Accordingly, the applicant and consultants should periodically communicate with the City and/or reviewer as appropriate.

11. Trench excavation shall be done in a safe manner. The following is required by the Department:

- a) Consulting firms conducting trench exploration are required to have their annual CalOSHA permit current. Proof of the annual permit and notification to CalOSHA of the specific project shall be on site at all times.

- b) Underground Service Alert must be notified at least two days prior to excavation. Consideration should also be given for the use of a private utility locator utilizing electromagnetic utility locating techniques and/or ground penetrating radar to map out the location of known or suspected utilities.

- c) Permits from the Department of Public Works are required for excavations in the public right-of-way.

- d) CalOSHA regulations regarding trench safety shall be followed, with appropriate shoring and/or benching, ladders and/or exit ramps, etc.

- e) Trenches left overnight shall be secured by locked fencing. In some cases, it may be appropriate to cover the trenches with steel plates or chain link fencing for an added precaution. (See BH-113 for “Steel Plate For Open Trench Detail”)

- f) The Department’s reviewing geologist shall be invited to observe the trench(es) after they are secured; shored or benched, cleaned, and a string line or grid reference system is in place. A completed field log is preferred but not a formal requirement.

- g) For major projects, invitation to CGS geologists and other paleoseismic experts to view trenches is encouraged.
h) A grading permit is required for trench excavation as well as backfilling the
trench with primary or secondary certified fill. Otherwise, backfill will be considered
uncertified.

i) Spoil piles should be protected from erosion during the rainy season and not
encroach neighboring property.

j) Trenches should not remove lateral support from adjoining property, buildings
on or off the site, or public right-of-way.

k) Below is the link to City of Beverly Hills Public Right-of-Way use and Hauling
regulations, approved heavy haul routes, and required permits.
http://www.beverlyhills.org/business/constructionlanduse/publicrightofwayhauling/

PERTINENT REFERENCES

California Geological Survey, 2002, Guidelines for evaluating the hazard of surface fault
rupture: Technical Note 49, 4 p.,

California Geological Survey, 2018a, Earthquake Fault Zones: A guide for government
agencies, property owners/developers, and geoscience practitioners for assessing

California Geological Survey, 2018b [B. Olson, lead author], The Hollywood, Santa
Monica and Newport-Inglewood faults in the Beverly Hills and Topanga 7.5’
quadrangles, Los Angeles, County, California: California Geological Survey Fault