February 3, 2023
GDI #: 23.00120.0019

CITY OF ROSEMEAD - GEOTECHNICAL REVIEW SHEET

To:	Annie Lao
Project/Location:	7849-7859 Garvey Avenue and 7900-7916 Virginia Street, City of Rosemead, California.
Case #:	Not available
Geotechnical Reports:	Environmental Geotechnology Laboratory, Inc. (2015), "*Report of Geotechnical Engineering Investigation, Proposed Mixed-Use Buildings and Associated Structures, AON: 5287-038-018, 019, 020, 029, 030 & 033, 7849-7859 Garvey Avenue & 7900-7916 Virginia Street, Rosemead, California, EGL Project No.: 22-AA-089GE, dated August 15, 2022*.
References:	Earth Consultants International, Inc. (2023), "Geological Report Review, dated February 3, 2023 (attached).
Plans:	None
Previous Reviews:	None

FINDINGS

Feasibility-Level	Engineering-Level/Plan Check
☒ Acceptable as Presented	
☐ Response Required	☒ Response Required

REMARKS

Environmental Geotechnology Laboratory, Inc**.** (EGL; consultant) provided a "Report of Geotechnical Engineering Investigation" for the proposed mixed-use development on properties that encompass the following addresses: 7849-7859 Garvey Avenue and 7900-7916 Virginia Street, City of Rosemead, California. The proposed development includes the construction of a six-story, wood-frame mixed-use buildings with concrete slabs-on-grade and other associated improvements. Grading the site will include minor amounts of cut and fill. No subterranean levels are proposed.

GeoDynamics, Inc. (GDI) reviewed the referenced report from a geotechnical perspective for compliance with applicable codes, guidelines, and standards of practice. GDI performed the review on behalf of the City of Rosemead, Department of Planning. This review is performed in conjunction with the attached "Geological Report Review" by Earth Consultants International, Inc. referenced above. Based upon our review, the above-referenced report should be acceptable as presented for the Feasibility/Environmental Stage and Clear for Public Hearing (See Conditions Below). Engineering-Level/Plan-Check comments are conditioned to be addressed during the Engineering/Design stage during building and safety review when development plans become available.

ENGINEERING-LEVEL/PLAN-CHECK REVIEW COMMENTS

1. The consultant should review development plans, including the grading plan when they become available. A copy of the grading plan that depicts the outline of the proposed building should be used as a base map for an updated geotechnical map. Additional geotechnical recommendations should be provided as necessary to address the various aspects of the development/grading plans.

2. There are existing buildings at the site. The consultant should discuss if these buildings/improvements will be removed, and should provide geotechnical recommendations as necessary for demolishing the buildings.

3. The consultant indicates on page 3 that "*Based on the historically high groundwater depth map prepared by CDMG Seismic Hazard Zone Report 024 the historic groundwater is approximately 30 - 40 feet below ground surface at the subject site (High Ground Water Map El Monte Quadrangle).*" But based on a review of the 1998 Seismic Hazard Evaluation Report for the El Monte Quadrangle (Open-File Report 98-15) by the CGS (formerly CDMG), historical-high groundwater at the site appears to be about 30 ft below the existing grade. With that being the case, the consultant should discuss and evaluate as necessary the potential for liquefaction and related hazards at the site, unless earth materials below historical-high groundwater are deemed non-liquefiable based on the screening criteria outlined in Appendix Pg (GS 045.0) of the County of Los Angeles Geotechnical Guidelines. This will require subsurface exploration extending to at least 50 feet below the proposed finish grade. Mitigation measures should be recommended as necessary.

4. As per the County of Los Angeles Guidelines, the consultant should discuss and evaluate as necessary the potential for static and seismic dry-sand settlements under the anticipated loading conditions. Mitigation measures should be recommended as necessary.

5. The consultant should discuss if an onsite stormwater disposal system is proposed at the site. If proposed, infiltration tests should be performed in accordance with the County of Los Angels Geotechnical Guidelines.

6. The project address on the front page of the geotechnical report does not exactly match the address shown on the geotechnical map. The outline of the project, based on the streets range of numbers does not match the street numbers of properties as outlined in the on-line resource Earthquake Zones of Required Investigation. Please review and resolve this apparent discrepancy.

7. The consultant should provide pavement design recommendations for outside access/parking areas and for the garage floor slab.

8. The consultant should depict the horizontal and vertical limits of the recommended overexcavation at the site.

9. The following notes must be added to the grading plan:

    - The geotechnical consultant should determine the expansion potential of the finished grade materials at the completion of grading. Grading and Foundation design recommendations should be revised if the expansion potential of finished grade materials substantially differs from the assumed expansion range.
    - At the completion of grading, samples of the onsite soils should be collected and tested for corrosion potential.
    - R-value tests should be performed as necessary on finish grade materials in the driveway and parking areas.
    - An as-built report prepared by the geotechnical consultant must be submitted to the City for review. The report must include the results of all compaction tests as well as a map depicting the limits of overexcavation, observed geologic conditions, locations of all density tests, locations and elevations of all removal bottoms, and location and elevation of all retaining wall backdrains and outlets.

10. Print the name, address, and phone number of the Project Geotechnical Consultant and list all applicable geotechnical reports on the building/grading plans.

11. The following note must appear on all foundation plans: "All foundation excavations must be observed and approved by the Project Geotechnical Consultant prior to placement of reinforcing steel."

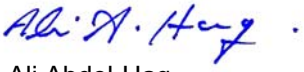
12. The foundation plans and foundation details shall clearly depict the embedment material and minimum depth of embedment for the foundations.

13. The final grading, drainage, shoring, and foundation plans should be reviewed, signed and wet stamped by the project geotechnical consultant.

If the City, consultant, or owners have any questions regarding this review letter, please contact GeoDynamics, Inc. at (805) 496-1222.

Respectfully submitted,

GEODYNAMICS, INC.



Ali Abdel-Haq
Geotechnical Engineering Reviewer
GE 2308 (exp. 12/31/23)

QA/QC: **CJS**

Attachment: Geological Report Review by Earth Consultants International, Inc.

February 3, 2023
ECI Project No. 4111.02

City of Rosemead
Geological Report Review

Project Name:	Strathmore / Garvey Mixed Use Project
Location:	7900-7816 Virginia Street and 7849, 7853 and 7859 Garvey Avenue Assessor Parcel Nos.: 5287-038-018, -019, -020, -29, -030 and -033 Lat: 34.06283 to 34.06375, Long: -118.09722 to -118.09779
Proposed Development:	Mixed-use use buildings, up to six-stories high. The wood- and steel-framed buildings will sit on on-grade concrete slabs. Figure 2 of the 2022 EGL report is shows a >6,000 square-foot retail building fronting Garvey Avenue, a building divided into residential units fronting Strathmore Avenue, and a parking structure fronting Virginia Street.
Reports Reviewed Here:	**Environmental Geotechnology Laboratory, Inc. (EGL), 2023**, Response to City of Rosemead Comments, Proposed Mixed-Use Buildings and Associated Structures, APN:5287-038-018, 019, 020, 029, 030 & 033, 7849 – 7859 Garvey Avenue & 7900 – 7916 Virginia Street, Rosemead, California; EGL Project No. 22-AA-089GER, dated January 5, 2023, signed by Ryan Jones, GE 2852, Senior Engineer, and Raymond Yang, CEG 2459, Senior Geologist. **Environmental Geotechnology Laboratory, Inc. (EGL), 2022**, Report of Geotechnical Engineering Investigation, Proposed Mixed-Use Buildings and Associated Structures, APN:5287-038-018, 019, 020, 029, 030 & 033, 7849 – 7859 Garvey Avenue & 7900 – 7916 Virginia Street, Rosemead, California; EGL Project No. 22-AA-089GE, dated August 15, 2022, signed by Ryan Jones, GE 2852, Senior Engineer.
Other Reports Pertinent to Site Previously Reviewed and Approved:	CalLand Engineering, Inc. dba Quartech Consultants, 2021, Fault Hazard Investigation, 7900-7916 Virginia Street and 7849, 7853, 7857 Garvey Avenue, APNs 5287-038-018, 019, 020, 030 and 033, City of Rosemead, County of Los Angeles, California; unpublished consulting report prepared for Green Park Property LLC; Project No. 21087004, dated September 29, 2021, signed by Fred Aflakian, OG, CEG 2051, Engineering Geologist and Jack C. Lee, GE 2153, Principal. Helms, John, 2021, Soil Stratigraphy Study and Relative Age Estimates for a Fault Rupture Hazard Investigation at 7900-7916 Virginia Street, Rosemead, CA: unpublished report prepared for Cal Land Engineering, Inc., dated September 24, 2021, included as Appendix D in Cal Land's report above; signed by John Helms, CEG 2272.
Previous Reviews for this Property:	Earth Consultants International, Inc., 2021, Geological Report Review addressing Fault Hazard Investigation conducted by CalLand Engineering, Inc. dba Quartech Consultants with Appendix by John Helms; ECI Project No. 4111, dated October 1, 2021, signed by Tania Gonzalez, CEG 1859.
Type of Report Addressed Here:	Preliminary Geotechnical

FINDINGS

☐ Report is Acceptable as Presented
☐ Report is Acceptable with the Following Conditions
☑ Response is Required (see Remarks)

BACKGROUND

The site is located just outside the liquefaction hazard zone shown on the California Geological Survey's Seismic Hazards map for the El Monte Quadrangle, which was prepared and issued in accordance with requirements established by the Seismic Hazards Mapping Act (California PRC Div. 2, Chapter 7.8, sec. 2690-2699.6). Historically high groundwater levels under the site are reported as less than 30 feet in Plate 1.2 of the Seismic Hazard Zone Report 024 for the El Monte Quadrangle (CDMG, 1998), reproduced as Figure 5-5 in Rosemead's (2010) General Plan Update. Recognizing that a property outside the limits of a zone of required investigation may be susceptible to seismic hazards (CGS, 2008), and that historically high groundwater levels less than 50 feet are reported for the site, the liquefaction susceptibility of the sediments underlying the site should be addressed using site-specific data rather than relying exclusively on the State-issued regional map. This will be addressed further below, and under separate cover by the geotechnical reviewer.

The site is not located within an Alquist-Priolo Earthquake Fault Zone (per California PRC Div. 2, Chapter 7.5, sec. 2621-2630), but it is located within a City-defined Fault Hazard Management Zone (City of Rosemead General Plan, 2010). Given that the proposed development is to have a high population density, the City considers this project an important structure. A fault investigation was required and previously conducted for the northern half of the site by CalLand Engineering (CalLand) in 2021. However, the subsurface coverage of CalLand's study, which relied on the correlation of continuously sampled borings and cone penetration tests (CPTs), did not extend fully to the southwest and northeastern corners of the area of required investigation due to logistical constraints. A review of historical aerial photographs and topographic maps was used to extend their conclusions to the areas not covered by the borings and CPTs. CalLand's study was approved by Earth Consultants International under contract to the City's Planning Department. In their January 2023 Response to Comments, Environmental Geotechnology Laboratory, Inc. (EGL) indicates that they are now the geological consultant of record for the site, and that they have reviewed and concur with the findings presented by CalLand. EGL has now obtained additional subsurface data that can be used to extend the area of study across the southwestern boundary of the zone of required investigation.

EGL has conducted a preliminary geotechnical study of the site in support of the proposed development. To complete this study, the consultants drilled, logged and sampled six small-diameter (8 inch) hollow stem borings generally scattered around the site, with at least one boring located near or within the area where each of the three main structures (retail, residential, parking) are proposed. One boring (B-2) was drilled to a depth of 35 feet, one (B-1) was drilled to a depth of 25 feet, and the remaining four (B-3, B-4, B-5 and B-6) were drilled to 10 feet. Thus, none of the borings were drilled to sufficient depth to evaluate the site for liquefaction in accordance with the guidelines of Special Publication 117A (CGS, 2008). The study should have, at a minimum, included a screening evaluation using the existing cone penetration test (CPT) data available for the site, and borings drilled to at least 50 feet.

The consultant reported that alluvial soils underlie the site to the total depth of their borings, with these soils typically consisting of clayey sand in the upper 6 feet, and silty sand below to a depth of approximately 27 feet. These sediments are in turn underlain by clayey sand to the total depth investigated of 35 feet. Blow counts indicate that the uppermost section to about 5 feet is medium dense, and the deeper sediments are generally dense to very dense, although medium dense layers

were reported locally at a depth of 10 feet. Groundwater was not encountered to the total depth explored of 35 feet.

These findings are generally consistent with the data obtained from two continuously sampled borings and fifteen CPTs previously emplaced across the northern half of the site for the fault investigation by CalLand (2021). These borings and several of the CPTs were drilled to a depth of 40 feet. Based on the work completed by CalLand and Mr. Helms, the area that they investigated is reportedly underlain by Holocene deposits to an approximate depth of 6.2 feet, with Pleistocene deposits underlying the study area to at least 40 feet. No groundwater was encountered in the 40-foot-deep borings. The historically high groundwater level at the site is incorrectly reported by EGL as being between 30 and 40 feet deep. The State-issued map (CDMG, 1998) places the site between the 20 and 30 foot-depth contours. Given this finding, combined with subsurface data that indicates the site is underlain by clayey sand and silty sand, the potential for liquefaction should be evaluated more thoroughly. Cross-sections that show the lateral distribution of sediments underlying the proposed structures should be prepared using the subsurface data available.

Most soil samples collected by EGL from their borings were analyzed for dry unit weight and in-situ moisture content, with a select few samples tested for direct shear strength, consolidation, and expansion index. The tests indicate that the near-surface soils have a low expansion potential and will not react with concrete, but are mildly corrosive to metal.

EGL (2023) provided seismic design parameters based on the ASCE 7-16 standard used by the 2022 California Building Code, with Site Class D selected as the default site class. The spectral acceleration values provided are in agreement with the values we obtained independently using the ASCE7 Hazard Tool website (https://asce7hazardtool.online/). When the same analysis is run using the ASCE 7-22 standard, the spectral acceleration values for the site are 10 to 15 percent higher.

REMARKS

Earth Consultants International, Inc. (ECI) reviewed the above-referenced report for compliance with applicable codes, guidelines and standards of practice. Please note that the City of Rosemead has adopted the 2022 California Building Code as amended by Title 26 of the Los Angeles County Code, including appendices. Accordingly, the City refers to the current California Building Code and the Los Angeles County Manual for Preparation of Geotechnical Reports (http://dpw.lacounty.gov/gmed/permits/docs/manual.pdf) for requirements regarding the scope and content of geotechnical reports submitted to the City by development applicants and their consultants.

The proposed development as described by the consultant will consist of six-story-high structures intended for both commercial and residential occupancies, and a multi-story parking structure. According to the City's 2010 Updated General Plan, these buildings are "important" structures "that should receive increased consideration for geologic, soil, seismic/earthquake, and flood hazard avoidance." Given this classification and the findings described in the Background Section above, from a geological perspective the following items need to be addressed before the project can be approved:

1. The liquefaction susceptibility of the sediments underlying the site should be evaluated with site-specific data.

2. Cross-sections that extend across the limits of the proposed structures should be prepared and provided to show the geological layers that underlie the site to the total depth explored. At least one cross-section should extend across the Fault Hazard Management Zone to confirm the findings of the fault investigation conducted by CalLand Engineering, with an emphasis on shadowing the locations of the proposed commercial and residential structures. These cross-sections should be prepared by or under the direction of a California-registered Engineering Geologist.
3. Given that the consultant is relying on the work previously conducted by CalLand Engineering, for completeness sake, their report should include the CalLand report as an appendix, with EGL referring to the appendix for information regarding the Alhambra Wash fault.
4. EGL should discuss the seismic setting of the site and vicinity with a more thorough description of the regional fault sources and the impact that the thick stratigraphic section under Rosemead has on ground motions (deep basin effect) to support and explain the seismic design values provided.
5. Percolation testing of the underlying soils should be conducted if the project will infiltrate storm water into the ground. The impact that this may have on the liquefaction susceptibility of the soils should be addressed.
6. Once more detailed development plans are available, the findings of the preliminary geotechnical report should be reviewed to confirm that they are still applicable, and a revised report should be issued as appropriate.

If the City, consultant or owners have any questions regarding the comments presented above, please contact Earth Consultants International, Inc.

Respectfully submitted for
EARTH CONSULTANTS INTERNATIONAL, INC.

Tania Gonzalez, CEG 1859
Engineering Geologic Reviewer for the City of Rosemead
Earth Consultants International, Inc.
1642 E. Fourth Street, Santa Ana, California 92701
(714) 412-2654 (direct), (714) 544-5321 (general office)

References and Sources:

California Division of Mines and Geology (CDMG), 1998, Seismic Hazard Zone Report for the El Monte 7.5-Minute Quadrangle, Los Angeles County, California: Seismic Hazard Zone Report 024.

California Geological Survey (CGS), 2008, Guidelines for Evaluating and Mitigating Seismic Hazards in California: Special Publication 117A.

City of Rosemead General Plan Update, 2010, Chapter 5: Public Safety, adopted April 13, 2010.