4.5 GEOLOGY AND SOILS

4.5.1 INTRODUCTION

This section discusses the existing geologic and soils environment and evaluates the potential impacts related to geology and soils as a result of the proposed project. This section addresses seismic conditions, soil erosion, stability of the underlying geologic unit, and soil conditions. The analysis of the potential project impacts related to geology and soils information is summarized from the *Report of Geotechnical Consultation Proposed Melrose Triangle Mixed-Use Project* (MACTEC, April 27, 2010) and the *Revised Supplemental Geotechnical Consultation, Proposed Melrose Triangle Mixed-Use Project* (AMEC Environment & Infrastructure [previously MACTEC], April 16, 2012), which are included in Appendix F. In addition, analysis in this section also relied on information contained in the *Hydrogeological Evaluation Report* (MACTEC Engineering and Consulting, Inc., January 26, 2009), the *Addendum to the Hydrogeological Evaluation Report Melrose Triangle Development* (AMEC Environment & Infrastructure, Inc., April 5, 2012), *Draft Addendum to the Hydrogeological Evaluation Report* (AMEC Environment & Infrastructure, Inc., July 2, 2012), and the *Impacts from Temporary Dewatering Memo, Proposed Melrose Triangle Mixed-Use Project* (AMEC, July 10, 2012), which are included in Appendix H.

4.5.2 METHODOLOGY

To assess the impacts of the proposed project with respect to geologic and soil conditions, geotechnical investigation and field explorations were undertaken by MACTEC Engineering and Consulting, Inc. The scope of the exploration included site reconnaissance, background review of pertinent prior explorations, laboratory tests, engineering analyses and report preparation.

Soils and geologic and seismic hazards, as identified based upon the report/literature reviews and the site investigation, were assessed with respect to significance within the context of Appendix G of the Guidelines for the California Environmental Quality Act (CEQA Guidelines).

4.5.3 EXISTING ENVIRONMENTAL SETTING

Regional Geology

The project site is located in the northern Los Angeles Basin, which consists mainly of marine clastic and organic sedimentary strata of middle Miocene to recent epoch (from 14.5 to 1.7 million years ago), including igneous rocks of middle Miocene epoch. The lower sequence generally consists of marine sandstone, siltstone, and minor amounts of conglomerate, deposited in a shallow marine environment.[1]

1 *Hydrogeologic and Water Quality Setting, Environmental Impact Report,* PSI, November 2004.

At the base of the Santa Monica Mountains and the Baldwin Hills, the deposits are overlain by gently rolling terrain consisting of alluvial deposits, deposited as alluvial fan material resulting from erosion of the southern slopes of the Santa Monica Mountains and the slopes of the Baldwin Hills. Along the coast, the marine deposits are generally covered by windborne sand deposited during the Pleistocene or alluvial materials deposited by Ballona Creek.[1]

Local Geology

The project site is less than 1 mile south of the Santa Monica Mountains and 6 miles north of the Baldwin Hills, in the northwest part of the Los Angeles County Coastal Plain. In the project area, there are two recorded geologic units, Quaternary older alluvium and Pleistocene nonmarine sediments. These sediment types are essentially the same and represent alluvial sediments that are between 5,000 to 10,000 years old. This recent alluvium resulted from erosion of the Santa Monica Mountains, which are part of the east-west trending Transverse Range Geologic Province. Underlying the recent alluvium is the Lakewood Formation, of Upper Pleistocene age and consisting of older alluvial deposits.

The project area, including the project site, is underlain by numerous water bearing zones called aquifers. A shallow aquifer system exists between depths of approximately 40 to 70 feet below ground surface (bgs), and a deeper aquifer system exists below at approximately 80 feet bgs. Other aquifers in the project area are substantially deeper, including the Exposition Aquifer, which is approximately 180 feet bgs and is approximately 10 feet thick in this area. During the geotechnical investigation, groundwater was encountered between 7 to 20 feet bgs. According to MACTEC, available hydrologic records near the project site indicate that the historic high groundwater level at the project site is approximately 10 feet bgs. Groundwater generally flows in a southeast direction.

The project site is generally flat, although the street level bordering the site drops approximately 13 feet from west to east and north to south. Elevation of the project site is approximately 240 feet above mean sea level. The project site is currently developed with office, retail, service commercial and light industrial uses, asphalt paving and a parking structure.

During the geotechnical investigation, fill soils up to 4 feet thick were encountered. The natural soils primarily consisted of young alluvium deposits, and the upper 60 feet of soils consisted of primarily loose to very dense well-graded sand, silty sand, and clayey sand with layers of stiff to very stiff sandy lean clay, lean clay, and silty clay. The soils below 60 feet consisted primarily of dense to very dense clayey sand, silty sand, well-graded sand, very stiff to hard sandy lean clay, and silty clay.

Faults and Seismic History

According to the City of West Hollywood General Plan, the Santa Monica Hollywood fault is an active fault that runs through the City and is capable of producing surface fault rupture during a future earthquake. The project site is located near the active Santa Monica-Hollywood Fault, which is

[1] *Hydrogeologic and Water Quality Setting, Environmental Impact Report,* PSI, November 2004.

located less than 0.5-mile north-northwest of the project site. The project site lies outside of the City's fault precaution zone for the Santa Monica Hollywood Fault.

At least eight active or potentially active faults are known to exist within a 35-mile radius of the project site. The nearest faults that are considered capable of producing strong ground shaking at the project site are the Hollywood-Raymond and Santa Monica systems. Both systems are believed to be capable of generating a maximum credible earthquake (MCE) of magnitude 7.0. It is not currently known whether there has been movement on these faults within Holocene time (the past 11,000 years); however, they do exhibit Late Quaternary displacement (within the last 750,000 years) and are recognized as potential hazards.

The California Geologic Survey (CGS) released a map titled *Seismic Hazard Zones, Beverly Hills 7.5 Minute Quadrangle, Official Map, Open File Report #98-14.* Figure 3.3 of Open File Report 98-14 contains ground motion values assigned by the CGS for the West Hollywood area. Using earthquake attenuation models that generate probabilistic analysis of potential ground shaking, a peak ground acceleration of 0.51 gram was predicted for an earthquake with a recurrence interval of 475 years (i.e., a 10 percent probability of exceedance in 50 years). The deaggregated predominant earthquake magnitude (M_w) was calculated at 6.4. This level of seismic activity could be experienced at the project site, as well as other areas in the City of West Hollywood.

Seismic Mapping

Beginning in 1997, the California Division of Mines and Geology (CDMG) has produced "Seismic Hazard Evaluation Reports" for the areas shown on selected United States Geological Survey (USGS) topographic maps (7.5-minute series) within the State of California. The purpose of these reports/ maps is to identify potential seismic hazards for use by city and county planning agencies in their permitting and land use planning processes.

The project site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone, and no Special Studies Zones have been designated within the City.[1]

Seismic Hazards

Ground Shaking and Surface Fault Rupture. The primary seismic effects associated with earthquakes are ground shaking and surface fault rupture. Ground shaking and surface fault rupture are typically considered to have the greatest potential for damage associated with earthquakes. Ground shaking is characterized by the physical movement of the land surface during and subsequent to an earthquake. Surface fault rupture occurs when fault displacement breaks the ground surface along the historic trace of a fault. These seismic events have the potential to cause destruction and damage to buildings and property, including damage resulting from damaged or destroyed gas or

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1 California Department of Conservation,Alquist-Priolio Earthquake Fault Zones, http://www.conservation.ca.gov/cgs/rghm/ap/affected.htm, accessed April 17, 2012.

2 California Department of Conservation,http://gmw.consrv.ca.gov/shmp/download/pdf\ozn_bevh.pdf, accessed April 17, 2012.

electrical utility lines, disruption of surface drainage, blockage of surface seepage and groundwater flow, changes in groundwater flow, dislocation of street alignments, displacement of drainage channels and drains, and possible loss of life. In addition, ground shaking and surface fault rupture can induce several types of secondary ground failures, including liquefaction and landslides.

Ground Failure. Secondary earthquake hazards such as liquefaction, lateral spreading, dynamic settlement, and landsliding are generally associated with relatively high intensities of ground shaking. Liquefaction, lateral spreading, and dynamic settlement are associated with shallow groundwater conditions and loose, sandy soils or alluvium.

Liquefaction. Soil liquefaction is a phenomenon that occurs during strong ground shaking, most commonly in generally low- to medium-density, saturated, low-cohesion soils, where the soils experience a temporary loss of strength and behave essentially as a fluid. In extreme cases, the soil particles can become suspended in groundwater, resulting in the soil becoming mobile and fluid-like. A review of the Seismic Hazard Mapping by the CDMG shows that the project site is located within a potential liquefaction zone.[2] This zone is defined as . . . "areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicated a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required."[1]

According to the Report of Geotechnical Investigation prepared for the proposed project, there is the potential for shallow soils below the historic high groundwater level (10 feet) to have the potential to liquefy during the design basis earthquake. However, soils below 60 feet are dense and are not considered to have a potential for liquefaction.

Lateral Spreading. Lateral spreading is the horizontal movement of soil masses caused by seismic waves; this movement is usually toward an open face slope or a steep slope that has been weakened by saturation. It occurs as a result of liquefaction of the subsurface soils. Because of the potential for liquefaction in the project area, there is a potential for lateral spreading at the site as a result of seismic activity.

Subsidence. Subsidence refers to broad-scale changes in the elevation of the land. Common causes of land subsidence are pumping water, oil, and gas from underground reservoirs; dissolution of limestone aquifers (sinkholes); collapse of underground mines; drainage of organic soils; and initial wetting of dry soils (hydrocompaction). Subsidence is also caused by heavy loads generated by large earthmoving equipment.

1 California Department of Conservation,http://gmw.consrv.ca.gov/shmp/download/pdf\ozn_bevh.pdf, accessed April 17, 2012.

Landslides and Slope Instability. Although there is a 13-foot elevation change across the project site, the site is located in a relatively flat area. According to the Seismic Hazard Mapping for the Beverly Hills quadrangle, the project site is not located within an earthquake-induced landslide area.[1]

4.5.4 REGULATORY SETTING

Federal Regulations

National Pollution Discharge Elimination System. Direct discharges of pollutants into waters of the United States are not allowed, except in accordance with the National Pollutant Discharge Elimination System (NPDES) program established in Section 402 of the Clean Water Act (CWA). A Storm Water Pollution Prevention Plan (SWPPP) prepared in compliance with an NPDES Permit describes erosion and sediment controls, runoff water quality monitoring, means of waste disposal, implementation of approved local plans, control of postconstruction sediment and erosion control measures and maintenance responsibilities, and nonstorm water management controls. Dischargers are also required to inspect construction sites before and after storms to identify storm water discharge from construction activity and to identify and implement controls where necessary.

State Regulations

Alquist-Priolo Earthquake Fault Zoning Act (1972). Regulations that are applicable to geologic, seismic, and soil hazards include the Alquist-Priolo Earthquake Fault Zoning Act of 1972 and updates (AP, Public Resources Code, Section 2621, et seq.), State-published Seismic Hazards maps, and provisions of the applicable edition of the California Building Code (CBC). The project site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone, and procedures and regulations as recommended by the California Geological Survey (CGS) for investigations conducted in such zones do not specifically apply.

Seismic Hazard Mapping Act (1990). The Seismic Hazard Mapping Act (SHMA) was adopted by the State in 1990 for the purpose of protecting public safety from the effects of (nonsurface fault rupture) earthquake hazards. The CGS prepares and provides local governments with seismic hazard zones maps that identify areas susceptible to amplified shaking, liquefaction, earthquake-induced landslides, and other ground failures. The seismic hazards zones are referred to as "zones of required investigation" because site-specific geological investigations are required for construction projects located within these areas. Before a project can be permitted, a geologic investigation, evaluation, and written report must be prepared by a licensed geologist to demonstrate that proposed buildings will not be constructed across active faults. If an active fault is found, a structure for human occupancy must be set back from the fault (generally 50 feet). In addition, sellers (and their agents) of real property within a mapped Seismic Hazard Zone must disclose that the property lies within such a zone at the time of sale.

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1 California Department of Conservation,http://gmw.consrv.ca.gov/shmp/download/pdf\ozn_bevh.pdf, accessed April 17, 2012.

California Building Code (2010). California Code of Regulations (CCR), Title 24, Part 2, the California Building Code (CBC), provides minimum standards for building design in the State. Local codes are permitted to be more restrictive than Title 24, but not less restrictive. The procedures and limitations for the design of structures are based on site characteristics, occupancy type, configuration, structural system height, and seismic zoning. Construction activities are subject to occupational safety standards for excavation, shoring, and trenching as specified in California Occupational Safety and Health Administration (Cal/OSHA) regulations (CCR, Title 8).

California Health and Safety Code. Sections 17922 and 17951–17958.7 of the California Health and Safety Code require cities and counties to adopt and enforce the current edition of the CBC, including a grading section. The City enforces these provisions (refer to Title 13 of the City's Municipal Code). Sections of Volume II of the CBC specifically apply to select geologic hazards. Chapter 16 (Structural Design) of the CBC addresses requirements for seismic safety. Chapter 18 regulates excavation, foundations, and retaining walls. Chapter 33 contains specific safeguard requirements pertaining to site demolition and construction.

Local Policies and Regulations

Chapter 13.04 of the City Municipal Code. Chapter 13.04, Building Code, of the City Municipal Code enforces Part 2 of Title 24 of the CBC. The purpose of this chapter is to establish minimum standards to protect life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within the City. These standards are applicable to dwellings, lodging houses, congregate residences, hotels, motels, apartment houses, convents, monasteries, or other uses classified by the building code as a group occupancy use.

Safety and Noise Element of the City's General Plan. The primary goal of the City's Safety and Noise Element of the General Plan is to protect the public health, safety, and welfare through the land use planning, police and emergency services, research and monitoring, preparation for natural disasters, community engagement, and enacting policies. This element specifically addresses hazards, including earthquakes, landslides, flooding, fires, water supply, and hazardous materials.

4.5.5 THRESHOLDS OF SIGNIFICANCE

The following thresholds of significance criteria are based on Appendix G of the CEQA Guidelines. Based on these thresholds, implementation of the proposed project would have a significant impact related to geologic resources and soils if it would:

Threshold 4.5.1: Expose people or structure to potential substantial adverse effect, including the risk of loss, injury, or death involving:

a) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault,

b) Strong seismic ground shaking,

c) Seismic-related ground failure, including liquefaction, or

d) Landslides

Threshold 4.5.2: Result in substantial soil erosion or loss of topsoil;

Threshold 4.5.3: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;

Threshold 4.5.4: Be located on expansive soil, as defined by Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or

Threshold 4.5.5: Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

4.5.6 PROJECT IMPACTS

Because groundwater level is above the proposed foundation level, the subterranean portion of the project foundation and walls would be designed and constructed to withstand anticipated hydrostatic pressure in order to maintain structural integrity and to avoid a permanent dewatering system. This would function to keep groundwater from penetrating the structure. This design prevents water infiltration, resists buoyancy, and resists the hydrostatic pressure from subsurface groundwater. The bottom of the subterranean structure would consist of a concrete mat, a continuous thick layer of concrete (approximately 6 feet thick) underlying the entire building. The sides of the foundation/subsurface walls would be formed of concrete or other material designed to resist the anticipated hydrostatic pressure.

To counteract the upward pressure due to buoyancy and keep the structure anchored down, piles would be used below the mat. Piles are long, slender, concrete column-like elements. The piles would connect to the bottom of the mat and extend 40 to 60 feet into the ground to essentially anchor the building. The *Report of Final Geotechnical Consultation* (MACTEC Engineering and Consulting, Inc., Appendix H) recommended that 5–10 indicator piles be driven at the site to verify the required pile lengths and to evaluate the efficiency of driving systems. The proposed locations of indicator piles would be determined after the pile foundation plan is finalized. As a back-up to the specialized foundation, a series of pumps would be installed to dewater groundwater if needed.

The following impact analyses are based on project characteristics, statutory requirements, and the significance thresholds defined above.

Threshold 4.5.1: Would the proposed project expose people or structure to potential substantial adverse effect, including the risk of loss, injury, or death involving:

a) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

Potentially Significant Impact

Due to the proximity of the project site to known locations for the Santa Monica Hollywood Fault, there is the potential for surface fault rupture at the project site. Seismic design requirements would be fulfilled through preparation of a design-level geotechnical report, City approval, and incorporation of structural engineering requirements into the design. Therefore, compliance with recommendations in the Report of Geotechnical Investigation (Mitigation Measure GEO-1), City approval of the structural plans (Mitigation Measure GEO-2), City approval of the design-level geotechnical report prepared in compliance with the City's code and regulations (Mitigation Measure GEO-3), implementation of an excavation and dewatering monitoring program (Mitigation Measure GEO-4), and geotechnical observation and monitoring (Mitigation Measure GEO-5) would reduce potential impacts related to fault rupture to a less than significant level.

Threshold 4.5.1: Would the proposed project expose people or structure to potential substantial adverse effect, including the risk of loss, injury, or death involving:

b) Strong seismic ground shaking?

Potentially Significant Impact

As with all of Southern California, the project area is subject to strong ground motion resulting from earthquakes on nearby faults, including the Santa Monica Hollywood Fault. Ground shaking generated by fault movement has the potential to damage building foundations and structures. A design-level geotechnical investigation is necessary to determine appropriate seismic design provisions. The seismic design provisions would be incorporated into the final design plans. The City Engineer must review and approve final design plans for structural engineering compliance. Ground shaking impacts are mitigated through proper site preparation and design, implementation of site-specific geotechnical recommendations and seismic design criteria. Therefore, potential seismic ground-shaking impacts would be reduced to less than significant levels with implementation of recommendations in the Report of Geotechnical Investigation (Mitigation Measure GEO-1), City approval of the structural plans (Mitigation Measure GEO-2), City approval of the design-level geotechnical report prepared in compliance with the City's code and regulations (Mitigation Measure GEO-3), implementation of an excavation and dewatering monitoring program (Mitigation Measure GEO-4), and geotechnical observation and monitoring (Mitigation Measure GEO-5).

Threshold 4.5.1: Would the proposed project expose people or structure to potential substantial adverse effect, including the risk of loss, injury, or death involving:

c) Seismic-related ground failure, including liquefaction?

Potentially Significant Impact

There is the potential for liquefaction in soils between 10 and 60 feet below grade. However, the soils below the proposed foundation level (70-80 feet below grade) are dense and are not considered to have a potential for liquefaction. Therefore, the potential for liquefaction-induced settlement of the structure is considered to be low, although there is a potential for liquefaction to occur in the upper soils beyond the structure. In order to mitigate impacts associated with potential liquefaction within and outside of the structure footprint, site preparation and foundation design must be completed in accordance with the recommendations of the geotechnical engineer to provide a structurally sound foundation that accommodates any adjacent soil liquefaction potential. Therefore, compliance with recommendations in the Report of Geotechnical Investigation (Mitigation Measure GEO-1), City approval of the structural plans (Mitigation Measure GEO-2), City approval of the design-level geotechnical report prepared in compliance with the City's code and regulations (Mitigation Measure GEO-3), implementation of an excavation and dewatering monitoring program (Mitigation Measure GEO-4), and geotechnical observation and monitoring (Mitigation Measure GEO-5) would reduce potential liquefaction impacts to a less than significant level.

Threshold 4.5.1: Would the proposed project expose people or structure to potential substantial adverse effect, including the risk of loss, injury, or death involving:

d) Landslides?

Less Than Significant Impact

The project site is nearly level. There are no landslides on the project site and no known landslides extend onto the project site. Given the minimal amount of topographic relief on the project site and the lack of substantially topographic relief on adjoining properties, the potential for landslides as a result of the proposed project is minimal. Therefore, the proposed project would not result in significant, adverse impacts related to landslides.

Threshold 4.5.2: Would the proposed project result in substantial soil erosion or loss of topsoil?

Less than Significant Impact

Erosion Potential. During construction of the proposed project, there is the potential for soil erosion to occur where bare soil is exposed to wind and water. Best management practices (BMPs) are required under State regulations and the City's Development Conditions to prevent erosion of soil and water quality impacts (refer to Section 4.8, Hydrology and Water Quality). In addition, measures are required to be implemented to control fugitive dust during construction activities in compliance with SCAQMD Rules 402 and 403 (as listed in Standard Conditions of Section 4.2, Air Quality). After construction of buildings and parking lots and establishment of the landscaped areas, erosion potential would be minimal. With implementation of BMPs and adherence to SCAQMD Rules 402 and 403, potential impacts associated with soil erosion during construction activities would be reduced to less than significant levels.

Threshold 4.5.3: Would the proposed project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Potentially Significant Impact

Subsidence. The project site is not located within an area of known subsidence that may be associated with groundwater or petroleum withdrawal, peat oxidation, or hydrocompaction. However, due to the presence of shallow groundwater at the site, groundwater dewatering would be required during excavation and foundation preparation. To prevent subsidence during construction activities, the dewatering system would be implemented and monitored by a qualified dewatering contractor. The dewatering contractor would determine the size, spacing, and depths of dewatering wells. In addition, the dewatering contractor would determine the locations and sizes of any necessary trenches within the excavation and the volume of water inflow from the dewatering system. A groundwater dewatering permit would be required from the Regional Water Quality Control Board (Mitigation Measure HY-1).

The Report of Geotechnical Investigation and Temporary Dewatering Memo determined that there would be some settlement of soils beyond the footprint of the building due to groundwater dewatering during construction. This settlement was determined to be a maximum of one inch around the outline of the buildings and approximately one-quarter inch over 25 feet in areas directly adjacent to the site. According to the memo, this represents a negligible impact on existing structures and infrastructure and would therefore not be considered to be a significant amount of settlement (refer to Appendix H).

Because groundwater level is above the proposed foundation level (excavation to extend 70–80 feet below grade), the foundation would be designed to withstand anticipated hydrostatic pressure in order to maintain structural integrity and to avoid a permanent dewatering system. The foundation and walls below grade would be waterproofed to prevent intrusion. However, the Report of Geotechnical Investigation indicates that it is difficult to install a completely watertight waterproofing system; therefore, a secondary system to collect any nuisance water would be installed. Proper site preparation and foundation design would mitigate potential impacts related to subsidence. Therefore, compliance with recommendations in the Report of Geotechnical Investigation (Mitigation Measure GEO-1), City approval of the structural plans (Mitigation Measure GEO-2), City approval of the design-level geotechnical report prepared in compliance with the City's code and regulations (Mitigation Measure GEO-3), implementation of an excavation and dewatering monitoring program (Mitigation Measure GEO-4), and geotechnical observation and monitoring (Mitigation Measure GEO-5) would reduce potential subsidence impacts to a less than significant level.

Liquefaction. Refer to impact discussion under Threshold 4.5.1.c

Lateral Spreading. Because the project area is susceptible to earthquakes and liquefaction, lateral spreading is a concern. Seismic design requirements would be fulfilled through preparation of a design-level geotechnical report and incorporation of structural engineering requirements into the design to account for potential lateral spread of adjacent soil. Therefore, compliance with recommendations in the Report of Geotechnical Investigation (Mitigation Measure GEO-1), City approval of the structural plans (Mitigation Measure GEO-2), City approval of the design-level geotechnical report prepared in compliance with the City's code and regulations (Mitigation Measure GEO-3), implementation of an excavation and dewatering monitoring program (Mitigation Measure GEO-4), and geotechnical observation and monitoring (Mitigation Measure GEO-5) would reduce potential lateral spreading impacts to a less than significant level.

Threshold 4.5.4: Would the proposed project be located on expansive soil, as defined by Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Potentially Significant Impact

Expansive Soils. The Report of Geotechnical Investigation for the proposed project indicates that the site soils are expansive in nature. The proposed project would involve excavation of soils to a depth of 70–80 feet below grade in order to construct the building foundation. In other areas of the site, the natural soils would be inspected, and unsuitable deposits would be removed for export. At least the upper 2 feet of natural soil would be replaced with nonexpansive, properly compacted fill beneath hardscape or slabs. Proper site preparation and foundation design would mitigate potential impacts related to expansive soils on site. Therefore, compliance with recommendations in the Report of Geotechnical Investigation (Mitigation Measure GEO-1), City approval of the structural plans (Mitigation Measure GEO-2), City approval of the design-level geotechnical report prepared in compliance with the City's code and regulations (Mitigation Measure GEO-3), implementation of an excavation and dewatering monitoring program (Mitigation Measure GEO-4), and geotechnical observation and monitoring (Mitigation Measure GEO-5) would reduce potential expansive soils impacts to a less than significant level.

Threshold 4.5.5: Would the proposed project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

Less Than Significant Impact

Wastewater Disposal. The proposed project would connect to the existing City sewer system, and no septic tanks or alternative wastewater disposal system are proposed as part of the project. Therefore, the proposed project would not result in significant, adverse impacts related to alternative wastewater disposal systems.

4.5.7 MITIGATION MEASURES

GEO-1 Prior to the issuance of a building permit, the Applicant shall submit the final design/construction plans for review and approval by the City Building Official or designee and the City Engineer or designee. The final design/construction plans shall confirm that the recommendations from the Report of Geotechnical Consultation regarding foundation, site coefficient and seismic zonation, retaining wall and walls below grade, waterproofing and drainage, floor slab support, dewatering and groundwater control, excavation and slopes, and shoring have been incorporated into the final design.

GEO-2 Prior to the issuance of a building permit, the Applicant shall submit the final structural plans for review and approval by the City Building Official or designee and the City Engineer or designee, confirming that the conclusions and recommendations presented in the Report of Geotechnical Consultation are incorporated into the final structural plans.

GEO-3 Prior to the issuance of a building permit, the Applicant shall submit the final geotechnical report and design plans for review and approval by the City Building Official or designee and the City Engineer or designee to ensure that appropriate geotechnical design features, including earthquake-resistant design, have been incorporated into final site drawings in accordance with the most current Uniform Building Code, California Building Code, and the recommended seismic design parameters of the Structural Engineers Association of California.

GEO-4 Prior to issuance of grading or excavation permits or any dewatering activities, the Applicant shall submit the final geotechnical report and design plans for review by the City Building Official and the City Engineer to ensure that appropriate monitoring of the shoring system shall be implemented. As recommended in the Report of Geotechnical Consultation.

GEO-5 Ongoing during construction activities, the project geotechnical engineer shall, at a minimum, conduct the following, subject to the review and approval of the City Building Official or designee and the City Engineer or designee:

- Observe exposed subgrade in areas to receive fill and in areas where excavation has resulted in the desired finished subgrade;
- Evaluate the suitability of on-site and import soils for fill placement and collect and submit soil samples for required or recommended laboratory testing where necessary;
- Observe the fill and backfill for uniformity during placement;
- Test backfill for field density and compaction to determine the percentage of compaction achieved during backfill placement;
- Observe and probe foundation materials to confirm that suitable bearing materials are present at the design foundation depths;
- Observe the testing and installation of soldier piles to verify that the desired diameter and depth are obtained;
- Observe the installation and testing of the temporary tie-back anchors;

- Observe the installation of and dynamic testing of driven piles to develop a pile-driving criteria; and
- Observe the installation of production-driven piles to verify that the desired capacities and lengths are achieved.

4.5.8 CUMULATIVE IMPACTS

For the analysis of geology and soils, the study area considered for the cumulative impact of other projects consisted of (1) the area that could be affected by future proposed project activities, and (2) the areas affected by other projects whose activities could directly or indirectly affect the geology and soils of the project site. In general, only projects occurring adjacent to or very close to the project site were considered. These projects include the proposed La Peer Hotel located at 623 La Peer Drive (approximately 0.05 mile from the project site); the proposed retail development at 9061 Nemo Street (0.06 mile from the project site); and the proposed retail, retail, and residential development at 9062 Nemo Street (0.05 mile from the project site). However, despite their proximity to the project site, these projects are not anticipated to contribute to a cumulative impact related to geology and soils.

Future planned development and redevelopment adjacent to the project site would have the potential to generate geologic and soil impacts. However, each new project would be required to identify appropriate mitigation to minimize impacts, because the projects considered would not have the potential to cause cumulatively considerable adverse effects on human beings.

The mitigation measures specified in the impact categories discussed above are expected to minimize or avoid potential hazards due to on-site and off-site geologic and seismic factors. When considered in combination with the efforts of local agencies in their review and approval of future land use proposals, potential geologic and soil impacts would be identified and mitigated, as appropriate, for individual development projects adjacent to the project site. While the entire Los Angeles region is susceptible to seismic and other geologic hazards, many of the hazards are highly localized. Appropriate use of engineering technologies, coupled with siting considerations, would substantially lessen the potential cumulative geology and soil impacts of future development.

Therefore, the proposed project's contribution to geology and soils cumulative impacts would be less than cumulatively significant with implementation of mitigation.

4.5.9 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The mitigation measures described above would reduce the proposed project's potential geologic, seismic, and soils-related impacts and contribution to cumulative geology, seismic and soils impacts to below a level of significance. Therefore, there would be no significant and unavoidable adverse impacts of the proposed project related to geology and soils.

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