IV. Environmental Impact Analysis
D. Geology and Soils

1. Introduction

This section evaluates potential geologic and soils hazards at the Project Site, including the potential for the Project to cause or exacerbate direct or indirect impacts associated with existing environmental conditions, including fault rupture, ground shaking, soil liquefaction, soil expansion, and/or landslide. Impacts regarding these topics are based on the Preliminary Geotechnical Engineering Investigation (Geotechnical Investigation), Addendum I—Response to Soils Report Review Letter (Geotechnical Addendum I), and Addendum II—Additional Geotechnical Comments (Geotechnical Addendum II), all prepared by Geotechnologies, Inc. and provided in Appendix E of this Draft EIR.[1] The Geotechnical Investigation and Geotechnical Addendum I were reviewed and approved by the City of Los Angeles (City) Department of Building and Safety (LADBS) in May and August 2021.[2]

This section also evaluates the potential for the Project to directly or indirectly impact a unique paleontological resource or site or unique geologic feature. This component of the analysis is based in part on the Paleontological Resources Review Memorandum (Paleontology Technical Report), prepared by Dudek and included as Appendix F of this Draft EIR.[3]

---

1 Geotechnologies, Inc., Preliminary Geotechnical Engineering Investigation, Television City 2050 Specific Plan, 7800 West Beverly Boulevard, Los Angeles, California, April 22, 2021; Addendum I—Response to Soils Report Review Letter, Television City 2050 Specific Plan, 7800 West Beverly Boulevard, Los Angeles, California, June 3, 2021; and Addendum II—Additional Geotechnical Comments, Television City 2050 Specific Plan, 7800 West Beverly Boulevard, Los Angeles, California, August 26, 2021.

2 City of Los Angeles, Department of Building and Safety, Soils Report Review Letter, May 21, 2021; and City of Los Angeles, Department of Building and Safety, Soils Report Approval Letter, August 4, 2021. These letters are also included in Appendix E.

3 Dudek, Paleontological Resources Review Memorandum for the TVC 2050 Project, August 9, 2021.

2. Environmental Setting

a. Regulatory Framework

There are several plans, regulations, and programs that include policies, requirements, and guidelines regarding geology and soils at the federal, state, regional, and local levels. As described below, these plans, guidelines, and laws include the following:

- Earthquake Hazards Reduction Act
- National Pollutant Discharge Elimination System
- Society for Vertebrate Paleontology Standard Guidelines
- Alquist-Priolo Earthquake Act
- Seismic Hazards Mapping Act
- California Building Code
- California Penal Code Section 622.5
- California Public Resources Code Section 5097.5
- Los Angeles General Plan Safety Element
- General Plan Conservation Element
- Los Angeles Municipal Code

(1) Federal

(a) Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act was enacted in 1977 to "reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program." To accomplish this, the Earthquake Hazards Reduction Act established the National Earthquake Hazards Reduction Program (NEHRA). This program was substantially amended by the NEHRA Reauthorization Act of 2004 (Public Law 108-360).

Nehra's mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and

accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Programs under NEHRP help inform and guide local planning and building code requirements such as emergency evacuation responsibilities and seismic code standards such as those to which a proposed project would be required to adhere.

(b) National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) Program has been responsible for substantial improvements to our nation's and State's water quality since 1972. The NPDES permit sets erosion control standards and requires implementation of nonpoint source control of surface drainage through the application of a number of Best Management Practices (BMPs). NPDES permits are required by Section 402 of the Clean Water Act.[4]

(c) Society for Vertebrate Paleontology Standard Guidelines

The Society for Vertebrate Paleontology (SVP) has established standard guidelines that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation.[5] The Paleontological Resources Preservation Act (PRPA) of 2009 calls for uniform policies and standards that apply to fossils on all federal public lands. All federal land management agencies are required to develop regulations that satisfy the stipulations of the PRPA. As defined by the SVP, significant nonrenewable paleontological resources are:

> *Fossils and fossiliferous deposits here are restricted to vertebrate fossils and their taphonomic and associated environmental indicators. This definition excludes invertebrate or paleobotanical fossils except when present within a given vertebrate assemblage. Certain invertebrate and plant fossils may be defined as significant by a project paleontologist, local paleontologist, specialists, or special interest groups, or by lead agencies or local governments.[6]*

---

4 USEPA, Clean Water Act, Section 402: National Pollutant Discharge Elimination System, www.epa.gov/cwa-404/clean-water-act-section-402-national-pollutant-discharge-elimination-system, accessed March 21, 2022.

5 Society of Vertebrate Paleontology, Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, 2010.

6 Society of Vertebrate Paleontology, "Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines," *Society of Vertebrate Paleontology News Bulletin* 163:22 27, 1995.

As defined by the SVP, significant fossiliferous deposits are:

> *A rock unit or formation which contains significant nonrenewable paleontologic resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals, e.g., trackways, or nests and middens which provide datable material and climatic information). Paleontologic resources are considered to be older than recorded history and/or older than 5,000 years BP [before present].*[7]

Based on the significance definitions of the SVP, all identifiable vertebrate fossils are considered to have significant scientific value.[8] This position is adhered to because vertebrate fossils are relatively uncommon, and only rarely will a fossil locality yield a statistically significant number of specimens of the same genus. Therefore, every vertebrate fossil found has the potential to provide significant new information on the taxon it represents, its paleoenvironment, and/or its distribution. Furthermore, all geologic units in which vertebrate fossils have previously been found are considered to have high sensitivity. Identifiable plant and invertebrate fossils are considered significant if found in association with vertebrate fossils or if defined as significant by project paleontologists, specialists, or local government agencies.

(2) State

(a) Alquist-Priolo Earthquake Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) was signed into law on December 22, 1972 (revised in 1994) and codified into state law in the Public Resources Code (PRC) as Division 2, Chapter 7.5 to address hazards from earthquake fault zones. The purpose of this law is to mitigate the hazard of surface fault rupture by regulating development near active faults. As required by the Act, the State has delineated Earthquake Fault Zones (formerly Special Studies Zones) along known active faults in California, which vary in width around the fault trace from about 200 to 500 feet on either side of the fault trace. Cities and counties affected by the zones must regulate certain development projects within the zones. The State Geologist is also required to issue appropriate maps to assist cities and counties in planning, zoning, and building

---

7 Society of Vertebrate Paleontology, "Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines."

8 Society of Vertebrate Paleontology, "Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines."

regulation functions. Local agencies enforce the Alquist-Priolo Earthquake Fault Zoning Act in the development permit process, where applicable, and may be more restrictive than state law requires. According to the Alquist-Priolo Earthquake Fault Zoning Act, before a project that is within an Alquist-Priolo Earthquake Fault Zone can be permitted, cities and counties shall require a geologic investigation, prepared by a licensed geologist, to demonstrate that buildings will not be constructed across active faults. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back a distance to be established by a California Certified Engineering Geologist. Although setback distances may vary, a minimum 50-foot setback is typically required.

(b) Seismic Hazards Mapping Act

In order to address the effects of strong ground shaking, liquefaction, landslides, and other ground failures due to seismic events, the State of California passed the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6). Under the Seismic Hazards Mapping Act, the State Geologist is required to delineate "seismic hazard zones." Cities and counties must regulate certain development projects within these zones until the geologic and soil conditions of their project sites have been investigated and appropriate mitigation measures, if any, have been incorporated into development plans. The State Mining and Geology Board provides additional regulations and policies to assist municipalities in preparing the Safety Element of their General Plans and to encourage the adaptation of land use management policies and regulations to reduce and mitigate seismic hazards to protect public health and safety. Under PRC Section 2697, cities and counties must require, prior to the approval of a project located in a seismic hazard zone, submission of a geotechnical report defining and delineating any seismic hazard.

(c) California Building Code

The California Building Code (CBC), which is codified in Title 24 of the California Code of Regulations, Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, means of egress facilities, and general stability of buildings. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or those standards are not enforceable. The provisions of the CBC apply to the construction, alteration, movement, replacement, location, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The 2019 edition of the CBC is based on the 2018 International Building Code (IBC) published by the International Code Council. The code is updated triennially, and the 2019

edition of the CBC was published by the California Building Standards Commission on July 1, 2019, and became effective on January 1, 2020. Every three years, the State adopts new codes (known collectively as the California Building Standards Code) to establish uniform standards for the construction and maintenance of buildings, electrical systems, plumbing systems, mechanical systems, and fire and life safety systems. Sections 17922, 17958 and 18941.5 of the California Health and Safety Code require that the latest edition of the California Building Standards Code apply to local construction 180 days after publication. The significant changes to Title 24 in the 2019 edition can be found on the California Department of General Services website.[9]

(d) California Penal Code Section 622.5

California Penal Code Section 622.5 provides the following: "[e]very person, not the owner thereof, who willfully injures, disfigures, defaces, or destroys any object or thing of archeological or historical interest or value, whether situated on private lands or within any public park or place, is guilty of a misdemeanor."

(e) California PRC Section 5097.5

California PRC Section 5097.5 provides protection for paleontological resources on public lands, where Section 5097.5(a) states, in part, that:

> *No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands.*

(3) Local

(a) City of Los Angeles General Plan

(i) Safety Element

The City's General Plan Safety Element, which was adopted in 1996, addresses public safety risks due to natural disasters, including seismic events and geologic conditions, and sets forth guidance for emergency response during such disasters. The Safety Element also

[9] California Department of General Services, California Building Standards Code, www.dgs.ca.gov/BSC/Codes#@ViewBag.JumpTo/, accessed March 21, 2022.

provides maps of designated areas within Los Angeles that are considered susceptible to earthquake-induced hazards, such as fault rupture and liquefaction.

(ii) Conservation Element

The City's General Plan Conservation Element recognizes paleontological resources in Chapter II, Section 3, Archeological and Paleontological and identifies site protection as important, stating "[p]ursuant to CEQA, if a land development project is within a potentially significant paleontological area, the developer is required to contact a bona fide paleontologist to arrange for assessment of the potential impact and mitigation of potential disruption of or damage to the site." Section 3 of the Conservation Element, adopted in September 2001, includes policies for the protection of paleontological resources. As stated therein, it is the City's objective that paleontological resources be protected for historical, cultural research, and/or educational purposes. Section 3 sets as a policy to continue the identification and protection of significant paleontological sites and/or resources known to exist or that are identified during "land development, demolition, or property modification activities."

(b) Los Angeles Municipal Code

Chapter IX of the Los Angeles Municipal Code (LAMC) contains the City's Building Code, which incorporates by reference the CBC, with City amendments for additional requirements. LADBS is responsible for implementing the provisions of the LAMC. To that end, LADBS issues building and grading permits for construction projects. Building permits are required for any building or structure that is erected, constructed, enlarged, altered, repaired, moved, improved, removed, converted, or demolished. Grading permits are required for all grading projects other than those specifically exempted by the LAMC. LADBS has the authority to withhold building permit issuance if a project cannot mitigate potential hazards to the project or which are associated with the project. Throughout the permitting, design, and construction phases of a building project, LADBS engineers and inspectors confirm that the requirements of the LAMC pertaining specifically to geoseismic and soils conditions are being implemented by project architects, engineers, and contractors.

The function of the City's Building Code is to protect life safety and ensure compliance with the LAMC. Chapter IX addresses numerous topics, including earthwork and grading activities, import and export of soils, erosion and drainage control, and general construction requirements that address flood and mudflow protection, landslides, and unstable soils. Additionally, the LAMC includes specific requirements addressing seismic design, grading, foundation design, geologic investigations and reports, soil and rock testing, and groundwater.

Specifically, LAMC Section 91.1803 requires a Final Geotechnical Report with final design recommendations prepared by a California-registered geotechnical engineer and submitted to the LADBS for review prior to issuance of a grading permit. Final foundation design recommendations must be developed during final project design, and other deep foundation systems that may be suitable would be addressed in the Final Geotechnical Report. All earthwork (i.e., excavation, site preparation, any fill/backfill placement, etc.) must be conducted with engineering control under observation and testing by a geotechnical engineer and in accordance with LADBS.

b. Existing Conditions

(1) Regional Geology

Regionally, the Project Site is located in the northern portion of the Peninsular Ranges Geomorphic Province (Peninsular Ranges). The Peninsular Ranges are characterized by northwest-trending blocks of mountain ridges and sediment-floored valleys. The Los Angeles Basin is located at the northern end of the Peninsular Ranges. The Los Angeles Basin is bounded on the northwest by the Santa Monica Mountains and on the east and southeast by the Santa Ana Mountains and San Joaquin Hills. The Los Angeles Basin is underlain by a deep structural depression which has been filled by both marine and continental sedimentary deposits.

(2) Regional Faulting and Seismicity

The numerous faults in Southern California include active, potentially active, and inactive faults. Based on criteria established by the California Geological Survey, active faults are those that have shown evidence of surface displacement within the past 11,000 years (i.e., Holocene-age). Potentially active faults are those that have shown evidence of surface displacement within the last 1.6 million years (i.e., Quaternary-age). Inactive faults are those that have not shown evidence of surface displacement within the last 1.6 million years. The Southern California region also includes blind thrust faults, which are faults without a surface expression. Due to the buried nature of these thrust faults, their existence is usually not known until they produce an earthquake. Since the seismic risk of these buried thrust faults in terms of recurrence and maximum potential magnitude is not well established, the potential for earthquakes from buried thrust faults with magnitudes (M) higher than 6.0 cannot be precluded. The known buried thrust faults in the vicinity of the Project Site are discussed below and shown in Figure IV.D-1 on page IV.D-9.

(a) Active Faults

The Alquist-Priolo Earthquake Fault Zoning Act defines “active” and “potentially active” faults utilizing the same aging criteria as those used by the California Geological Survey, as described above. However, according to the Alquist-Priolo Earthquake Fault Zoning Act, only

Alquist-Priolo Earthquake Fault Zone

Active fault zones identified by the Alquist-Priolo Earthquake Fault Zoning Act

Figure IV.D-1
Regional Fault Map

Source: Los Angeles GeoHub - https://geohub.lacity.org, Eyestone Environmental, 2021.

those faults which have direct evidence of movement within the last 11,000 years are required to be zoned. The California Geological Survey considers fault movement within this period to be a characteristic of faults that have a relatively high potential for ground rupture in the future. As discussed in the Regulatory Framework section above, the Alquist-Priolo Earthquake Fault Zoning Act requires the State Geologist to establish Earthquake Fault Zones around the surface traces of active faults and to issue appropriate maps to assist cities and counties in planning, zoning, and building regulation functions.

These Earthquake Fault Zones, which generally extend from 200 to 500 feet on each side of a known active fault, are based on the location precision, complexity, or regional significance of the fault. The Earthquake Fault Zones identify areas where potential surface fault rupture along an active fault could be hazardous and where special studies are required to characterize hazards to habitable structures. If a site lies within an Earthquake Fault Zone on an official California Geological Survey map, then a geologic fault rupture investigation must be performed before the issuance of permits to demonstrate that the proposed development would not be threatened by surface displacement from the fault.

As illustrated in Figure IV.D-1 on page IV.D-9, no known active or potentially active faults have been mapped within or immediately adjacent to the Project Site. In addition, the Project Site is not located within an Alquist-Priolo Earthquake Fault Zone. The closest active fault is the Hollywood Fault located approximately 1.7 miles north of the Project Site.[10] The Hollywood Fault is part of an east-west trending fault complex termed the Santa Monica–Hollywood–Raymond Fault System, which generally forms the southern boundary of the Santa Monica and San Gabriel Mountains north of the fault system and the Los Angeles Basin south of the fault system and is believed to be capable of producing a M 6.6 earthquake with an estimated average maximum recurrence interval of 5,000 years or less. Due to the fact that no known active or potentially active faults have been mapped within or immediately adjacent to the Project Site and the Project Site is not located within an Alquist-Priolo Earthquake Fault Zone, the Geotechnical Investigation concluded that the potential for surface rupture at the Project Site is considered low.

(b) Seismicity

While no known active faults have been mapped across the Project Site and the Project Site is not located within an Alquist-Priolo Earthquake Fault Zone, the Project Site is located within the seismically active region of Southern California and could potentially be subject to strong seismic ground shaking if a moderate to strong earthquake (i.e., M 5.0 to 6.9) occurs on a local or regional fault. According to the California Earthquake Data Center,

[10] City of Los Angeles Department of City Planning, ZIMAS, Parcel Profile Report for APNs 5512-001-003, 5512-002-001, 5512-002-002, and 5512-002-009, http://zimas.lacity.org, accessed March 21, 2022.

recent historic earthquakes in the greater Los Angeles region include the 1933 Long Beach Earthquake (M 6.3), the 1971 Sylmar/San Fernando Earthquake (M 6.6), and the 1994 Northridge Earthquake (M 6.7).[11]

(3) Local Geology

(a) Soil Conditions

The fill soils that underlie the Project Site consist primarily of a mixture of silty clays, sandy silts, silty and clayey sands, and sands which were encountered to depths between three and 20 feet in all exploratory borings. While the majority of the Project Site contained fill thickness ranging between three and five feet in depth, localized fill was encountered at a depth of 20 feet within a former drainage course which historically traversed the western portion of the Project Site in a generally north-south direction. Another former drainage course historically traversed the southern portion of the Project Site in a generally east-west direction at a much shallower depth. Highly saturated and soft soils with a moisture content near or above 30 percent were encountered at various depths in the borings near the former drainage courses. Based on a review of historic photographs, the backfill in these former drainage courses appears to have been placed prior to 1950.

Native soils of older alluvial deposits were encountered beneath the fill soils at the Project Site and are comprised of sandy to silty clays, sandy silts, silty to clayey sands, and sands which are moist to wet, firm to stiff, dense to very dense, fine to course-grained, with occasional gravel and cobbles. These native soils consist predominantly of sediments deposited by river and stream action typical to the area of Los Angeles in which the Project Site is located.

(b) Groundwater

As part of the Geotechnical Investigation, 19 exploratory borings were drilled to depths of between 50 feet and 70 feet below the existing ground surface (bgs). Groundwater was first encountered between 20 and 30 feet bgs. However, prior to backfilling the completed boreholes, the groundwater level in all of the boreholes rose to depths of between eight and 15.5 feet bgs, indicating an artesian groundwater condition where groundwater with a positive hydrostatic pressure is trapped between relatively impermeable clay layers. Accordingly, the

[11] Southern California Earthquake Data Center, Historical Earthquakes and Significant Faults in California, https://scedc.caltech.edu/earthquake/significant.html, accessed March 21, 2022.

Geotechnical Investigation concluded that the historically highest groundwater level of eight feet bgs should be conservatively utilized within this impact analysis.[12]

(c) Liquefaction and Other Seismically-Induced Settlement and Ground Failure

Liquefaction is a phenomenon whereby saturated, granular soils lose their inherent shear strength due to excess pore water pressure buildup, such as that generated during repeated cyclic loading from an earthquake. Liquefaction is associated primarily with low density, granular, saturated soil in areas where the groundwater table is 50 feet or less bgs. Liquefaction-related effects can include sand boils, excessive settlement, bearing capacity failures, and lateral spreading.

As illustrated in Figure IV.D-2 on page IV.D-13 and according to the California Geological Survey, a majority of the Project Site is located within an area prone to liquefaction.[13] In addition, the Project Site is located in an area identified as potentially susceptible to liquefaction in the City of Los Angeles Safety Element and the City's Zoning Information and Map Access System (ZIMAS).[14,15] This determination is based upon groundwater depth records, soil type, and distance to a fault capable of producing a substantial earthquake.

While no known active faults have been mapped across the Project Site and the Project Site is not located within an Alquist-Priolo Earthquake Fault Zone, the Project Site is located within the seismically active region of Southern California and could potentially be subject to strong seismic ground shaking if a moderate to strong earthquake occurs on a local or regional fault. Therefore, a liquefaction analysis utilizing the historic high groundwater level of eight feet bgs was performed for the Project Site as part of the Geotechnical Investigation. Liquefaction analyses were performed at five-foot intervals within 12 of the 19 exploratory borings conducted on-site. As further discussed in the Geotechnical Investigation, the vast majority of liquefaction hazards are associated with soils of low plasticity, as indicated by their Plasticity Index (PI). Specifically, cohesive soils with a PI between seven and 12 and moisture content greater than 85 percent are susceptible to

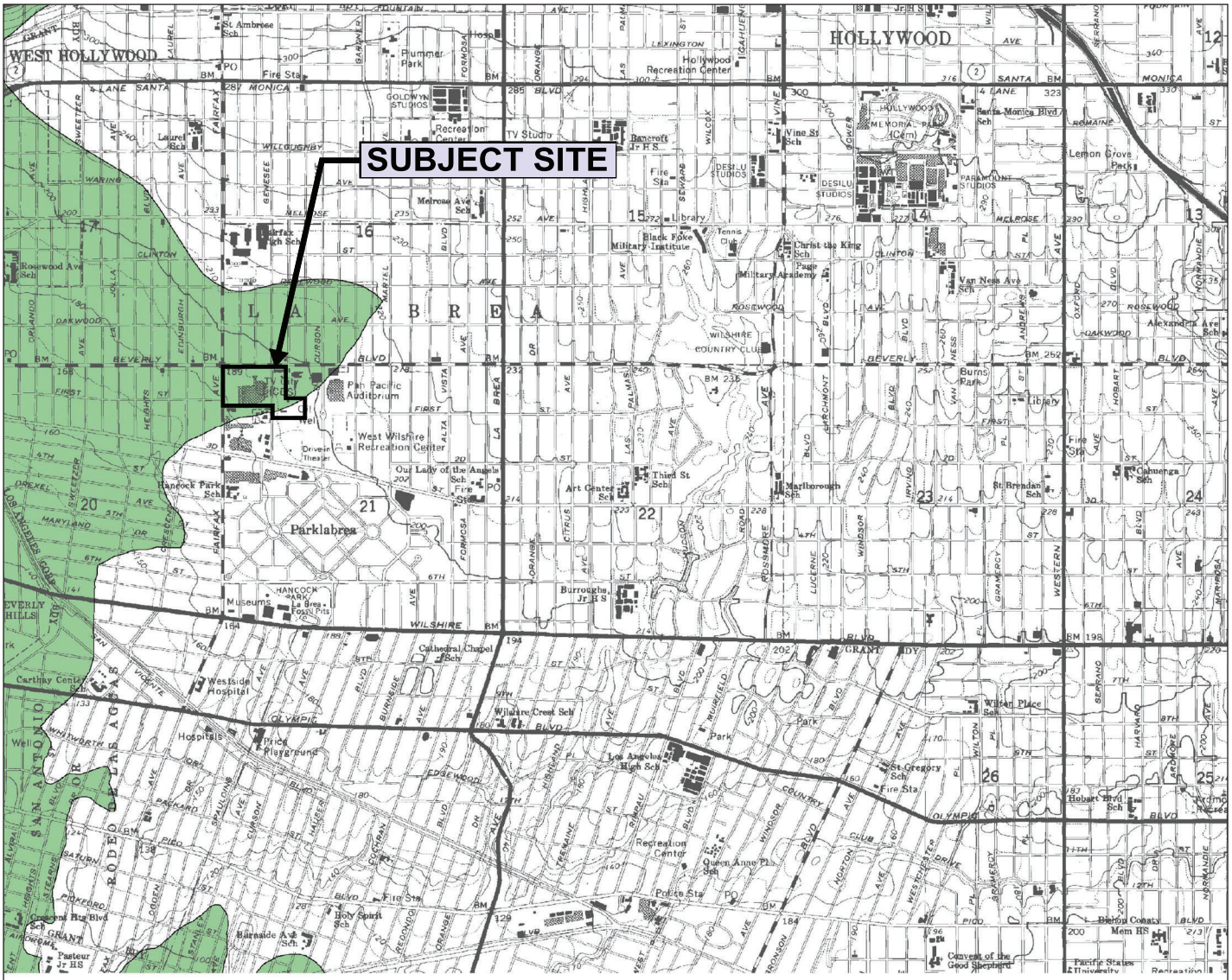
---

12 As discussed in Section IV.F, Hazards and Hazardous Materials, of this Draft EIR, investigations conducted by Geosyntec between 2018 and 2020 encountered groundwater at depths of approximately 10 and 25 feet bgs. Groundwater was slow to enter the boreholes at most locations and tended to rise in the boreholes above where it was first observed, similarly indicating confined or semi-confined groundwater conditions.

13 State of California, California Geologic Survey, Hollywood Quadrangle, Seismic Hazard Zones Map, March 25, 1999.

14 Los Angeles General Plan Safety Element, Exhibit B, Areas Susceptible to Liquefaction, November 1996, p. 49.

15 City of Los Angeles Department of City Planning, ZIMAS, Parcel Profile Report for APNs 5512-001-003, 5512-002-001, 5512-002-002, and 5512-002-009, http://zimas.lacity.org, accessed March 21, 2022.



REFERENCE: SEISMIC HAZARD ZONES, HOLLYWOOD QUADRANGLE OFFICIAL MAP (CDMG, 1999)

Figure IV.D-2
Liquifaction Area Map

Source: Geotechnologies, Inc., 2021.

liquefaction, whereas soils with a PI greater than 18 exhibit clay-like behavior and their liquefaction potential is considered low. All but one of the evaluated borings exhibited a PI of greater than 18 at all depths. Specifically, Boring B12 exhibited a PI of 14 at a depth of 10 feet, while at 35 feet the PI was 41, as shown in Plate F-3 of the Geotechnical Investigation. As such, the Geotechnical Investigation concluded that the potential for liquefaction at the Project Site is considered low.

Lateral spreading is the most common type of liquefaction-induced ground failure. Lateral spreading is a phenomenon in which large blocks of intact, non-liquefied soil move downslope on a liquefied soil layer. Lateral spreading is often a regional event. For lateral spreading to occur, the liquefiable zone must be continuous, unconstrained laterally, and free to move along gently sloping ground toward an unconfined area, such as an unlined river channel. The liquefaction analysis included in the Geotechnical Investigation concluded that since Project Site soils would not be prone to liquefaction during ground motion, the potential for lateral spreading would therefore be low.

Seismically-induced soil settlement can also result from earthquake ground motion and is most damaging when settlements are differential across the length of a structure. According to the Geotechnical Investigation, excessive differential settlements are not expected on-site due to the uniform nature of the underlying geologic materials.

(d) Subsidence and Other Ground Failure

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. No large-scale extraction of groundwater, gas, oil, or geothermal energy currently occurs or is planned at the Project Site. As discussed in Geotechnical Addendum II, based on the age of the older surficial sediments that underlie the Project Site, subsidence is not anticipated on-site. Therefore, the potential for ground subsidence due to the withdrawal of fluid or gas at the Project Site is low.

Hydroconsolidation is a phenomenon in which the underlying soils collapse or lose volume when saturated. More specifically, collapsible soils typically consist of loose, dry, low-density materials that collapse and compact under the addition of water or excessive loading.[16] Hydroconsolidation can result in foundation settlement or movement over long periods of wetting. As discussed in Geotechnical Addendum II, the consolidation tests performed on collected soil samples as part of the Geotechnical Investigation did not exhibit hydro-collapse upon saturation. Accordingly, the soils underlying the Project Site are not considered prone to sudden collapse or hydroconsolidation. However, as also discussed in

[16] ScienceDirect, Expansive Soils, www.sciencedirect.com/topics/engineering/expansive-soil, accessed March 21, 2022.

the Geotechnical Investigation, caving could be expected with large excavations that encounter granular, cohesionless soils and excavations below the groundwater table.

Expansive soils generally consist of clays that can shrink and swell with changes in moisture content. Movement of soils in response to shrinkage and swelling has the potential to impact near-surface improvements such as lightly loaded foundations, floor slabs, and flatwork. As determined in the Geotechnical Investigation, the on-site geologic materials are in the low to very high expansion range, with an Expansion Index ranging from 35 to 130. Any required import materials are recommended to have an Expansion Index of less than 50.

(4) Paleontological Resources

Paleontology is the study of fossils, which are the remains of ancient life forms. On May 26, 2021, a Project-specific paleontological records search was conducted through the Natural History Museum of Los Angeles (LACM). The records search results are considered confidential and are on file at the City for review by qualified individuals. The results of the paleontological records search indicate there are no previously encountered vertebrate fossil localities located within the Project Site. However, fossil localities have been identified within 2,000 feet of the Project Site from the same sedimentary deposits that occur beneath portions of the Project Site, as discussed further below. Dudek prepared the Paleontology Technical Report for the Project, included in Appendix F of this Draft EIR, based on the results of the confidential records search.

The Project Site is mapped as being underlain by older, elevated Quaternary alluvial deposits that are late Pleistocene in age (approximately 129,000 to 11,700 years old). These Pleistocene age alluvial deposits have a moderate to high potential to yield paleontological resources. Furthermore, these sedimentary deposits have the potential to yield scientifically significant vertebrate fossils, as discussed below.

Previously discovered fossils in the area have been located in older Quaternary age sedimentary deposits known as Pleistocene alluvium and the Palos Verdes Sand. Less than approximately 2,000 feet from the Project Site, near the intersection of Fairfax Avenue and 3rd Street, a Pleistocene age assemblage (LACM 7495) consisting of micro vertebrates (e.g., turtle, rabbit, and rodent) and megafaunal (e.g., horse, bison, camel, and mammoth) remains were recovered at 10 feet bgs, with a second locality (LACM 7478) yielding additional rodent specimens (e.g., pocket gopher) at a depth of 46 feet bgs. Also, less than approximately 2,000 feet from the Project Site, near the intersection of 3rd Street and Edinburgh Avenue, locality LACM 1268 yielded a specimen of undetermined elephant (e.g., Proboscidea, the family which includes mammoths and mastodons) at a depth of 20 feet bgs. Approximately 4,000 feet south of the Project Site, localities LACM 7513-7516 from Park La Brea included fossil specimens of snake, sloth, rabbit, rodent, skunk, horse, and camel. Numerous additional localities are known from the Rancho La Brea asphalt deposits located in Hancock

Park, a National Natural Landmark that has yielded millions of Pleistocene fossil plant, insect, and animal specimens. Fossil locality LACM 3261, located near the intersection of Beverly Boulevard and Kilkea Drive, less than approximately 2,000 feet west of the Project Site, yielded specimens of undetermined elephant (e.g., Proboscidea, which includes mastodons and mammoths) at an unknown depth. LACM 3371, located near the intersection of Sierra Bonita Avenue and Oakwood Avenue, less than approximately 2,000 feet northeast of the Project Site, produced specimens of prehistoric bison at a depth of 12 feet bgs.

Although no vertebrate fossils have been documented within the Project Site, previously undisturbed Pleistocene age older alluvial deposits and Palos Verdes Sand would be conducive to preserving such remains. Therefore, as concluded in the Paleontology Technical Report, it is possible that fossilized remains may be encountered during grading operations within the Project Site.

3. Project Impacts

a. Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines and the California Supreme Court decision in *California Building Industry Assn. v. Bay Area Air Quality Management District*, a project would have a significant impact related to geology and soils if it would result in any of the following impacts:[17]

Threshold (a): Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. 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. Refer to Division of Mines and Geology Special Publication 42.

ii. Strong seismic ground shaking.

[17] In 2015, the California Supreme Court, in California Building Industry Assn. v. Bay Area Air Quality Management Dist. (2015) 62 Cal.4th 369, held that CEQA generally does not require a lead agency to consider the impacts of the existing environment on the future residents or users of the project. The revised thresholds are intended to comply with this decision. Specially, the decision held that an impact from the existing environment to the project, including future users and/or residents, is not an impact for the purposes of CEQA. However, if the project, including future users and residents, exacerbates existing conditions that already exist, that impact must be assessed, including how it might affect future users and/or residents of the project.

iii. Seismic-related ground failure, including liquefaction.

iv. Landslides.

Threshold (b): Result in substantial soil erosion or the loss of topsoil.

Threshold (c): 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 (d): Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.

Threshold (e): 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.

Threshold (f): Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

(1) 2006 L.A. CEQA Thresholds Guide

The L.A. CEQA Thresholds Guide (Thresholds Guide) identifies the following criteria to evaluate geology and soils:

(a) Geologic Hazards

- Cause or accelerate geologic hazards, which would result in substantial damage to structures or infrastructure, or expose people to substantial risk of injury.

(b) Sedimentation and Erosion

- Constitute a geologic hazard to other properties by causing or accelerating instability from erosion; or
- Accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition which would not be contained or controlled on-site.

(c) Paleontological Resources

- Whether, or the degree to which, the project might result in the permanent loss of, or loss of access to, a paleontological resource; and

- Whether the paleontological resource is of regional or statewide significance.

In assessing impacts related to geology and soils in this section, the City will use Appendix G as the thresholds of significance. The criteria identified above from the Thresholds Guide will be used where applicable and relevant to assist in analyzing the Appendix G thresholds.

b. Methodology

To evaluate potential Project impacts relative to geology and soils, the Geotechnical Investigation included the excavation of 19 exploratory borings, collection of representative samples, laboratory testing, engineering analysis, review of published geologic data, and review of available geotechnical engineering information.

To address potential impacts to paleontological resources, a formal records search was conducted by LACM and a paleontological assessment was performed to assess the paleontological sensitivity of the Project Site and vicinity. In addition, an evaluation of existing conditions and previous disturbances within the Project Site, the geology of the Project Site, and the anticipated depths of grading were considered to determine the potential for uncovering paleontological resources.

c. Project Design Features

The following Project design feature is proposed with regard to geology and soils:

Project Design Feature GEO-PDF-1: All development activities conducted on the Project Site will incorporate the professional recommendations contained in the Preliminary Geotechnical Engineering Investigation and all associated Addenda and/or alternative recommendations set forth in a site-specific, design-level geologic and geotechnical investigation(s) approved by the City Engineer, provided such recommendations meet and/or surpass relevant state and City laws, ordinances, and Code requirements, including California Geological Survey's Special Publication 117A and the City's Building Code. Such professional recommendations will include, but will not be limited to, the following and may be revised or superseded in accordance with an approved final geotechnical investigation(s):

- Excavated fill materials will be removed and exported or properly removed and recompacted as controlled fill for foundation and/or slab support of lightly loaded structures.
- Imported soil materials will have an Expansion Index of less than 50.

- At-grade structures with column loads less than 500 kips will be supported on conventional foundations bearing in an engineered fill pad.
- Foundation piles will be used for high-load office buildings and parking structures.
- Temporary dewatering will be utilized during construction.
- Permanent structures will be designed for hydrostatic pressure such that the temporary construction dewatering system will be terminated at the completion of construction.
- Temporary shoring, such as conventional shoring piles and tiebacks, will be installed for excavation of the subterranean levels.

As discussed in Section II, Project Description, of this Draft EIR, earthwork activities would require an estimated 772,000 cubic yards of cut, potentially 50,000 cubic yards of imported fill, and up to 772,000 cubic yards of export, with a maximum excavation depth of approximately 45 feet.

d. Analysis of Project Impacts

Threshold (a): Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. 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? Refer to Division of Mines and Geology Special Publication 42.

(1) Impact Analysis

Ground rupture is the visible breaking and displacement of the earth's surface along the trace of a fault during an earthquake. As discussed in the Geotechnical Investigation, based on a review of available literature and the findings of the Geotechnical Investigation, no known active or potentially active faults underlie the Project Site. In addition, the Project Site is not located within a state-designated Alquist-Priolo Earthquake Fault Zone. The closest active fault is the Hollywood Fault located approximately 1.7 miles north of the Project Site, which is capable of producing a M 6.6 earthquake.[18] No active faults with the potential

[18] California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369, Case No. S213478.

(Footnote continued on next page)

for surface fault rupture are known to pass directly beneath the Project Site, and the potential for surface rupture due to faulting occurring beneath the Project Site is considered low. **Thus, the Project would not directly or indirectly cause or exacerbate potential substantial adverse effects, including the risk of loss, injury, or death related to fault rupture. Impacts associated with surface rupture from a known earthquake fault would be less than significant.**

(2) Mitigation Measures

Project-level impacts related to fault rupture would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Project-level impacts related to fault rupture were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

Threshold (a): Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

ii. Strong seismic ground shaking?

(1) Impact Analysis

As described above, the Project Site is located within the seismically active region of Southern California and could potentially be subject to strong seismic ground shaking if a moderate to strong earthquake occurs on a local or regional fault. Any potentially significant impacts related to seismic ground shaking at the Project Site would not be directly or indirectly caused or exacerbated by the Project given that no mining operations, exceptionally deep excavations, or boring of large areas creating unstable seismic conditions would occur. Furthermore, as discussed above, no active faults with the potential for surface fault rupture are known to pass directly beneath the Project Site. As such, the Project would not exacerbate existing environmental conditions and cause or accelerate geologic hazards related to strong seismic ground shaking.

As discussed in the Regulatory Framework section above, state and local code requirements ensure that buildings are designed and constructed in a manner that would

[18] City of Los Angeles Department of City Planning, ZIMAS, Parcel Profile Report for APNs 5512-001-003, 5512-002-001, 5512-002-002, and 5512-002-009, http://zimas.lacity.org, accessed March 21, 2022.

reduce the risk of building collapse, although buildings may still sustain damage during a major earthquake. The State and City both mandate compliance with numerous regulations related to seismic safety, including the Alquist-Priolo Earthquake Fault Zoning Act, Seismic Safety Act, Seismic Hazards Mapping Act, the California Building Code, the City's General Plan Safety Element, and the Los Angeles Building Code. The Project will be required to demonstrate compliance with the applicable provisions of these safety requirements before permits can be issued for construction. Accordingly, the Project's design and construction would comply with all applicable regulatory requirements, including applicable provisions of the Los Angeles Building Code relating to seismic safety, and accepted and proven construction engineering practices would be implemented, including the Project-specific geotechnical design recommendations set forth in the Geotechnical Investigation and in Project Design Feature GEO-PDF-1.

The Project would also comply with the Los Angeles Building Code, which incorporates the current seismic design provisions of the 2019 California Building Code, with City amendments, to minimize seismic impacts. The 2019 California Building Code incorporates the latest seismic design standards for structural loads and materials, as well as provisions from the National Earthquake Hazards Reduction Program to mitigate losses from an earthquake and maximize earthquake safety. LADBS is responsible for implementing the provisions of the Los Angeles Building Code, and the Project would be required to comply with the plan review and permitting requirements of LADBS, including the recommendations provided in a final, site-specific geotechnical report subject to review and approval by LADBS. The final geotechnical report would include the recommendations of the Geotechnical Investigation included in Appendix E of this Draft EIR, and its final recommendations would be enforced by the LADBS for the construction of the Project. **Through compliance with regulatory requirements and site-specific geotechnical recommendations contained in a final design-level geotechnical engineering report, the Project would not directly or indirectly cause or exacerbate potential substantial adverse effects, including the risk of loss, injury, or death related to strong seismic ground shaking. Thus, impacts related to strong seismic ground shaking would be less than significant.**

(2) Mitigation Measures

Project-level impacts related to strong seismic ground shaking would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Project-level impacts related to strong seismic ground shaking were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

Threshold (a): Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

iii. Seismic-related ground failure, including liquefaction?

(1) Impact Analysis

As discussed above, although much of the Project Site is located within a liquefaction area, the results of the liquefaction analysis performed as part of the Geotechnical Investigation included in Appendix E of this Draft EIR demonstrate that the potential for liquefaction at the Project Site is considered low. The Geotechnical Investigation also recommends foundation piles for any high-load office buildings and parking structures, which would be incorporated per Project Design Feature GEO-PDF-1. The maximum settlement of the pile foundation system bearing into the underlying native soils and bedrock is expected to be less than 1 inch and would occur below the heaviest loaded columns, while differential settlement is not expected to exceed 0.5 inch. Additionally, the Project would be designed in accordance with the Los Angeles Building Code, which requires implementation of engineering techniques to minimize hazards related to ground failure, including liquefaction, to acceptable levels. As such, the Project would not exacerbate existing environmental conditions or cause or accelerate geologic hazards related to liquefaction. Furthermore, while some seismically-induced settlement of the proposed structures on the Project Site could result from strong ground shaking associated with an earthquake, due to the uniform nature of the underlying geologic materials, excessive differential settlements are not expected to occur. As such, the potential for seismic settlement is considered low. **Therefore, the Project would not directly or indirectly cause or exacerbate potential substantial adverse effects, including the risk of loss, injury, or death related to seismic-related ground failure, including liquefaction. Impacts associated with seismic-related ground failure, including liquefaction, would be less than significant.**

(2) Mitigation Measures

Project-level impacts related to liquefaction would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Project-level impacts related to liquefaction were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

Threshold (a): Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

iv. Landslides?

As discussed in Section VI, Other CEQA Considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included in Appendix A of this Draft EIR, the Project Site is not located in a landslide area mapped by the state or the City. Furthermore, as concluded in the Geotechnical Investigation, the probability of seismically-induced landslides occurring on the Project Site is considered low due to the minimal change in elevation throughout and adjacent to the Project Site. Further, the Project Site does not currently include expanses of exposed soils which could result in a landslide during a rain event. In addition, the Project would not alter exposed soils on a hill, nor inject water into the soil upslope that could cause a landslide downhill. **Therefore, as determined in the Initial Study, the Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death related to landslides. As such, no impacts with respect to Threshold (a)iv would occur. No further analysis is required.**

Threshold (b): Would the project result in substantial soil erosion or the loss of topsoil?

As discussed in Section VI, Other CEQA Considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included in Appendix A of this Draft EIR, all grading activities would require grading permits from LADBS, which would include requirements and standards designed to ensure that substantial soil erosion does not occur. In addition, on-site grading and site preparation would comply with all applicable provisions of LAMC Chapter IX, Article 1, which addresses grading, excavations, and fills. Furthermore, the Project would be required to comply with the City's Low Impact Development (LID) ordinance and implement standard erosion controls to limit stormwater runoff, which can contribute to erosion. In addition, the Geotechnical Investigation includes weather-related grading recommendations, including the compaction of fill soils prior to rain events and the use of temporary, non-erosive drainage devices. Regarding Project operations, the potential for soil erosion is relatively low since the Project Site would be fully developed and no soils would be left exposed. **Therefore, as determined in the Initial Study, with compliance with regulatory requirements, the Project would not result in substantial soil erosion or the loss of topsoil. As such, impacts with respect to Threshold (b) would be less than significant. No further analysis is required.**

Threshold (c): Would the 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?

(1) Impact Analysis

As discussed above and in Section VI, Other CEQA Considerations, of this Draft EIR, the Project Site is not located in a landslide area as mapped by the State or the City. Furthermore, as concluded in the Geotechnical Investigation included in Appendix E of this Draft EIR, the probability of seismically-induced landslides occurring on the Project Site is considered low due to the minimal change in elevation throughout and adjacent to the Project Site. **Therefore, no impacts related to landslides would occur.**

As previously noted, liquefaction-related effects include lateral spreading. The Geotechnical Investigation concluded that since Project Site soils would not be prone to liquefaction during ground motion, the potential for lateral spreading also would be low. **As such, the Project would not be located on or exacerbate a geologic unit or soil that is unstable, which could potentially result in lateral spreading. Impacts related to lateral spreading would be less than significant, and no mitigation measures are required.**

With respect to subsidence, as previously discussed, no large-scale extraction of groundwater, gas, oil, or geothermal energy currently occurs or is planned at the Project Site. Additionally, as discussed in Geotechnical Addendum II, based on the age of the older surficial sediments that underlie the Project Site, subsidence is not anticipated on-site. Therefore, the potential for ground subsidence due to the withdrawal of fluid or gas at the Project Site is low. Project excavations for below-grade parking would extend to a maximum depth of approximately 45 feet. As discussed in the Geotechnical Investigation, the historic high groundwater level on the Project Site is approximately eight feet bgs, which was conservatively assumed for analytical purposes. Although dewatering operations are expected during construction, such activities would be limited and temporary and would not involve large-scale water extraction. **As such, the Project would not be located on or exacerbate a geologic unit or soil that is unstable, which could potentially result in subsidence. Impacts related to subsidence would be less than significant.**

As also discussed above, the liquefaction analyses conducted as part of the Geotechnical Investigation concluded that the potential for liquefaction at the Project Site is considered low. **As such, the Project would not be located on or exacerbate a geologic unit or soil that is unstable, which could potentially result in liquefaction. Impacts associated with liquefaction would be less than significant.**

According to the Geotechnical Investigation, the fill soils that underlie the Project Site consist primarily of a mixture of silty clays, sandy silts, silty and clayey sands, and sands which were encountered to depths between three and 20 feet in all exploratory borings. While the majority of the Project Site contains fill thickness ranging between three and five feet in depth, localized fill was encountered at a depth of 20 feet within one of the two former drainage courses on-site, near which highly saturated and soft soils with a moisture content

near or above 30 percent were encountered. As discussed in Geotechnical Addendum II, the consolidation tests performed on collected soil samples as part of the Geotechnical Investigation did not exhibit hydro-collapse upon saturation. Accordingly, the soils underlying the Project Site are not considered prone to sudden collapse or hydroconsolidation. Although minor caving may occur during drilling for anchors, this would be addressed through the implementation of engineering techniques, such as the use of casing and sand backfill, as recommended in the Geotechnical Investigation. The Geotechnical Investigation also addresses the use and treatment of fill and recommends that all existing fill pads be removed and recompacted. The existing on-site soils may be reused for placement as compacted fill. In addition, the Project would be required to provide a final, site-specific geotechnical report that would include the preliminary recommendations from the Geotechnical Investigation as well as final recommendations that would be enforced by LADBS. **As such, the Project would not be located on or exacerbate a geologic unit or soil that is unstable or that would become unstable as a result of the Project and potentially result in collapse. Impacts associated with collapsible soils would be less than significant.**

(2) Mitigation Measures

Project-level impacts related to a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Project-level impacts related to a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

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

(1) Impact Analysis

As discussed in the Geotechnical Investigation, the on-site geologic materials are in the low to very high expansion range. The Expansion Index was found to be between 35 to 130 for bulk samples; by comparison, any required import materials are recommended to have an expansion index of less than 50 in accordance with Project Design Feature GEO-PDF-1. **With implementation of Project Design Feature GEO-PDF-1, potential impacts with regard to expansive soil would be less than significant.**

(2) Mitigation Measures

With implementation of Project Design Feature GEO-PDF-1, Project-level impacts related to expansive soil would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Project-level impacts related to expansive soil were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

Threshold (e): Would the 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 wastewater?

As discussed in Section VI, Other CEQA Considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included in Appendix A of this Draft EIR, the Project Site is served by existing sewage infrastructure. The Project's wastewater demand would be accommodated via connections to the existing wastewater infrastructure system. As such, the Project would not require the use of septic tanks or alternative wastewater disposal systems. **Therefore, as determined in the Initial Study, the Project would not result in impacts related to the ability of soils to support septic tanks or alternative wastewater disposal systems. Therefore, no impacts with respect to Threshold (e) would occur. No further analysis is required.**

Threshold (f): Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

(1) Impact Analysis

As previously discussed, according to a records search of the paleontological specimen and locality records held by the LACM Vertebrate Paleontology Department and the Paleontology Technical Report prepared by Dudek, there are no previously encountered fossil vertebrate localities located within the Project Site. However, localities have been documented elsewhere in the area from the same geologic units that occur beneath portions of the Project Site, and several of these localities are located within approximately 2,000 feet from the Project Site. Previously discovered fossils in the area have been in older Quaternary age sedimentary deposits known as Pleistocene alluvium and the Palos Verdes Sand, which have the potential to yield scientifically significant vertebrate fossils. As previously discussed, the Project would include excavations up to a maximum of approximately 45 feet below grade, which could potentially disturb previously undiscovered

paleontological resources. **Therefore, potential impacts to unique paleontological resources would be potentially significant.**

With regard to unique geologic features, given that the Project is located in a highly developed urban area, there are no unique geologic features on the Project Site. **Therefore, as determined in the Initial Study, the Project would not directly or indirectly destroy a unique geologic feature. No impact with respect to the destruction of a unique geologic feature would occur, and no further analysis is required.**

(2) Mitigation Measures

The following mitigation measure is provided to reduce impacts to paleontological resources:

Mitigation Measure GEO-MM-1: The services of a Project paleontologist who meets the Society of Vertebrate Paleontology standards (including a graduate degree in paleontology or geology and/or a publication record in peer reviewed journals, with demonstrated competence in the paleontology of California or related topical or geographic areas, and at least two full years of experience as assistant to a Project paleontologist), shall be retained prior to ground disturbance activities associated with Project construction in order to develop a site-specific Paleontological Resource Mitigation and Treatment Plan. The Paleontological Resource Mitigation and Treatment Plan shall specify the levels and types of mitigation efforts based on the types and depths of ground disturbance activities and the geologic and paleontological sensitivity of the Project Site. The Paleontological Resource Mitigation and Treatment Plan shall also include a description of the professional qualifications required of key staff, communication protocols during construction, fossil recovery protocols, sampling protocols for microfossils, laboratory procedures, reporting requirements, and curation provisions for any collected fossil specimens.

This Project paleontologist shall supervise a paleontological monitor who shall monitor all ground disturbance activities within Pleistocene age older alluvial deposits and the Palos Verdes Sand in order to identify potential paleontological remains. If significantly disturbed deposits or younger deposits too recent to contain paleontological resources are encountered during construction, the Project paleontologist may reduce or curtail monitoring in those affected areas, after consultation with the Applicant and the Los Angeles Department of City Planning's Office of Historic Resources.

(3) Level of Significance After Mitigation

To address potential impacts to paleontological resources, paleontological monitoring would be required during excavation within Pleistocene age older alluvial deposits and the Palos Verdes Sand. The monitoring program would follow the guidelines outlined by the Society of Vertebrate Paleontology and include sediment sampling protocols for microfossil recovery. No monitoring would be required during excavation within artificial fill, as these deposits do not contain paleontological resources in their original stratigraphic context and thus have a low sensitivity. **With the implementation of Mitigation Measure GEO-MM-1, Project-level impacts to unique paleontological resources would be reduced to a less-than-significant level.**

e. Project Impacts with Long-Term Buildout

While Project buildout is anticipated in 2026, the Project Applicant is seeking a Development Agreement with a term of 20 years, which could extend the full buildout year to approximately 2043. The Development Agreement would confer a vested right to develop the Project in accordance with the Specific Plan and a Mitigation Monitoring and Reporting Program (MMRP) throughout the term of the Development Agreement. The Specific Plan and MMRP would continue to regulate development of the Project site and provide for the implementation of all applicable Project design features and mitigation measures associated with any development activities during and beyond the term of the Development Agreement. Additionally, given that geological and paleontological conditions are site-specific and do not typically vary over the course of relatively short timeframes, a later buildout date would not affect the impacts or significance conclusions presented above.

f. Cumulative Impacts

(1) Impact Analysis

Due to the site-specific nature of geological conditions (i.e., soils, geological features, subsurface features, seismic features, etc.), geological impacts are typically assessed on a project-by-project basis, rather than on a cumulative basis. Nonetheless, cumulative growth in the surrounding area (inclusive of the 68 related projects identified in Section III, Environmental Setting, of this Draft EIR) through 2026, the Project's anticipated buildout year, would expose a greater number of people to seismic hazards.[19] However, as with the

[19] While Project buildout is anticipated in 2026, the Project Applicant is seeking a Development Agreement with a term of 20 years, which could extend the full buildout year to approximately 2043. A later buildout date would not affect the cumulative analysis of impacts related to geology and soils or paleontological resources as conditions with regard to geology and soils, including paleontological resources, would not be expected to change substantially during this time frame.

Project, related projects and other future development projects would be subject to established guidelines and regulations pertaining to building design and seismic safety, including those set forth in the California Building Code and Los Angeles Building Code, as well as site-specific geotechnical evaluations that would identify potential effects related to the underlying geologic and soil conditions for a particular related project site. **With adherence to applicable regulations and any site-specific recommendations set forth in a site-specific geotechnical evaluation, the Project and related projects would not result in significant cumulative impacts related to geological and soil conditions. As such, the Project's contribution would not be cumulatively considerable, and cumulative impacts would be less than significant.**

With regard to potential cumulative impacts related to paleontological resources, the Project Site is located within a highly urbanized area that has been disturbed and developed over time. Therefore, many subsurface paleontological resources in the area have likely been disturbed by present development. Like the Project, as part of the environmental review processes for the related projects, it is expected that mitigation measures would be established as necessary to address potential impacts to paleontological resources. **Therefore, the Project and related projects would not result in significant cumulative impacts to paleontological resources. As such, the Project's contribution would not be cumulatively considerable, and cumulative impacts would be less than significant.**

(2) Mitigation Measures

Cumulative impacts related to geology and soils and paleontological resources would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Cumulative impacts related to geology and soils and paleontological resources were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.