

IV. Environmental Impact Analysis

E. Geology and Soils

1. Introduction

This section evaluates potential geologic and soils hazards of the Project, including the potential for the Project to cause direct or indirect impacts associated with existing environmental conditions that could cause, in whole or in part, fault rupture, ground shaking, liquefaction of soils, expansion of soils, and/or landslide. Impacts regarding these topics are based on the *Updated Geotechnical Engineering Investigation for the Proposed Hilton Universal City Expansion Project* (Geotechnical Report)¹ and *Response to City of Los Angeles Soils Report Review Letter* (Response Letter),² which are provided together as **Appendix E-1** of this Draft EIR. The Geotechnical Report was approved by the Los Angeles Department of Building and Safety (LADBS) in January 2023.³ The approval letter from LADBS is also provided in Appendix E-1 of this Draft EIR. This section also evaluates the potential for the Project to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. This component of the analysis is in part based on a *Paleontological Resources Assessment Report*,⁴ which is included as **Appendix E-2** of this Draft EIR.

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 that apply to the Project. As described below, these plans, guidelines, and laws include the following:

- Earthquake Hazards Reduction Act

¹ Geotechnologies, Geotechnical Engineering Investigation for the Proposed Hilton Universal City Expansion Project for APN 2424-044-022, 555 Universal Hollywood Drive, Los Angeles, CA 91608, September 14, 2022. File No. 21578.

² Geotechnologies, Response to City of Los Angeles Soils Report Review Letter Proposed Hilton Los Angeles/Universal City Expansion for APN 2424-044-022, 555 Universal Hollywood Drive, Los Angeles, CA 91608, December 8, 2022. File No. 21578.

³ City of Los Angeles, Department of Building and Safety, Geology and Soils Report Approval Letter, January 10, 2023. This letter is also included in Appendix E-1.

⁴ ESA, Paleontological Resources Assessment Report, 2023.

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

(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 (NEHRP). This program was substantially amended by the NEHRP Reauthorization Act of 2004 (Public Law 108-360).

NEHRP’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 (NPDES)*

The 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.⁵

⁵ <https://www.epa.gov/cwa-404/clean-water-act-section-402-national-pollutant-discharge-elimination-system>. Accessed May 2022.

(c) *Society for Vertebrate Paleontology Standard Guidelines*

The Society for Vertebrate Paleontology (SVP) has established standard guidelines⁶ 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. 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,⁷ 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.

As defined by the SVP,⁸ 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].

Based on the significance definitions of the SVP,⁹ all identifiable vertebrate fossils are considered to have significant scientific value. 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

⁶ Society of Vertebrate Paleontology, Standard procedures for the assessment and mitigation of adverse impacts to paleontological resources, 2010, https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines-1.pdf Accessed May 2022.

⁷ 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.

⁸ Society of Vertebrate Paleontology, Assessment and mitigation of adverse impacts to nonrenewable paleontologic resources.

⁹ Society of Vertebrate Paleontology, Assessment and mitigation of adverse impacts to nonrenewable paleontologic resources.

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 December 22, 1972 (revised in 1994) and codified into State law in the Public Resources Code 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 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 (Public Resources Code 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 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 at California Department of General Services website.¹⁰

(d) *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.

¹⁰ State of California Department of General Services. Building Standards Commission Codes. <https://www.dgs.ca.gov/BSC/Codes#@ViewBag.JumpTo/> Accessed Month May 2022.

(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 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 Section 3: "Archeological and Paleontological" and identifies site protection as important, stating, "Pursuant to CEQA, if a land development project is within a potentially significant paleontological area, the developer is required to contact a bonafide 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 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

This section summarizes the existing geologic conditions outlined in the Updated Geotechnical Engineering Investigation (Geotechnical Report) and LADBS Approval Letter¹¹ included in Appendix E-1 of this Draft EIR. The information provided below is from this investigation unless otherwise cited.

The geotechnical investigation conducted for the Project Site includes a review of the on-site investigation conducted in 2015 and results prepared by Geotechnologies, Inc. for a previous hotel design in 2016,¹² a review of reports prepared in 1981 to support the development of the Existing Hotel Building,¹³ information derived from drilling of five boring and 15 test pits conducted on the Project Site between 2018 and 2019,¹⁴ and five test pits conducted in 2022 in association with the Project, including collecting representative samples, laboratory testing, and engineering analysis.

(1) Regional and Local Geologic Setting

Regionally, the Project Site is located in the Transverse Ranges Geomorphic Province and is within the Los Angeles Basin area of southern California. The Transverse Ranges are characterized by roughly east-west trending mountains, and the northern and southern boundaries are formed by reverse fault scarps. The convergent deformational

¹¹ Geotechnologies, Inc., *Updated Geotechnical Engineering Investigation*, Proposed Hilton Universal City Expansion Project, 555 Universal Hollywood Drive, Los Angeles, California, September 14, 2022, File No. 21578. City of Los Angeles, Geology and Soils Report Approval Letter, January 10, 2023. See Appendix E-1 of this Draft EIR.

¹² The report (File No. 21062, original report dated December 17, 2015, correction letter dated December 12, 2016 and revised report dated February 12, 2016, with an Addendum dated January 31, 2017) was submitted to the City Department of Building and Safety Grading Division and was approved (Geology and Soils Report Approval Letter, dated February 23, 2017). The 2017 Geotechnical Investigation included three borings and two test pits.

¹³ LeRoy Crandall and Associates prepared a Geotechnical Investigation in 1981 for the existing hotel and conducted inspections and testing during construction.

¹⁴ After the Approval Letter was received from LADBS in 2017, Geotechnologies Inc. prepared an updated report for the Project dated November 20, 2020 (File No. 21578) which included the five boring and 15 test pits. The updated report prepared in 2020 was not submitted to LADBS for review.

features of the Transverse Ranges are a result of north-south shortening due to plate tectonics, which have resulted in local folding and uplift of the mountains along with the propagation of thrust faults (including blind thrusts). The intervening valleys have been filled with sediments derived from the bordering mountains.

The Project Site is located on the north slope of the Santa Monica Mountains near the Cahuenga Pass. The Santa Monica Mountains are comprised of fine-grained sedimentary rocks of the Upper Topanga Formation. The rocks consist of well bedded siltstone and claystone with thin interbeds of sandstone. Bedding in the Project vicinity has been deformed into a broad northwest plunging syncline.¹⁵ The orientation of layers of sedimentary rock deposits (known as bedding attitudes) in the Project vicinity dip to the north at angles from 35 to 65 degrees.¹⁶ Some geologic maps indicate bedding dips to the northwest from 45 to 65 degrees in the Project vicinity. These bedding directions are favorable from the standpoint of the stability of the promontory, as discussed below.

(a) *Site Geology and Generalized Subsurface Conditions*

The Project Site is situated on a promontory (a point of high land) that descends moderately to the west, south, and east at a grade of approximately 50 percent (2:1 horizontal-to-vertical gradient). The top of the promontory is approximately 703 feet above mean sea level (amsl) and the on-site low point is approximately 670 feet amsl, with an overall elevation change of approximately 33 feet across the Project Site.

The Project Site is underlain by fill soils, alluvium, and sedimentary bedrock of the Upper Topanga Formation. The fill soils, placed at the time of construction of the Existing Hotel Building under the observation of a geotechnical consultant and as approved by the City,¹⁷ vary in depth and consistency. On the southern portion of the Project Site, south of the Existing Hotel Building, the fill consists of silty sand and sand that is dark brown, moist, and medium dense. The fill on this portion of the Project Site ranges from three to 22.5 feet at the toe of the slope. Approximately four feet of fill covers the slopes in the pool deck area and the top of the promontory. The fill in the northern portion of the Project Site consists of silty sand and sandy silt that is yellowish brown, moist, and moderately dense and ranges from one to four feet. The service road, which is located on the eastern portion of the Project Site, is located on an easterly-ascending slope. The fill in this area consists of silty sand and sandy silt that ranges in color from brown to yellowish brown to gray. The fill generally ranges from one foot to greater than 25 feet. At the northern end,

¹⁵ Bedding, or stratification, is the layering that occurs in sedimentary rocks and sometimes found in metamorphic rock. A syncline is a fold in a sequence of rock layers in which the younger rock layers are found in the center (along the axis) of the fold. Microsoft Word - structureLab9.doc (sdsu.edu). Accessed September 21, 2022.

¹⁶ A bedding attitude is defined as the strike and dip of a bed. Strike is the direction of a line produced by the intersection of an imaginary horizontal plane with an inclined bed. Dip is the angle between the imaginary horizontal plane and the inclined bed measured in a plane oriented at 90° to the strike line.

¹⁷ The compaction report approval letter from the City is provided in the Geotechnical Report provided in Appendix E-1 of this EIR.

the fill is up to 9 feet in thickness, and, at the southern end of the service road, the fill depth is greater than 25 feet.¹⁸

Alluvium is found in the southern portion of the Project Site and consists of silty sand and sandy silt that is brown to dark brown, moist, and medium dense. Near the base of the alluvium, the soil coarsens, and gravel and few cobbles were identified. The thickness of the alluvium is 17.5 feet, and the basal contact was identified at a depth of 32.5 feet. Contact is a term used to define the boundary which separates one stratigraphic unit (or rock body) from another. In this instance the alluvium is separated from the basal (or bottom) stratigraphic unit, the Upper Topanga Formation (which is the bedrock), at a depth of 32.5 feet.

The bedrock underneath the Project Site consists of interbedded siltstone and sandstone with beds of coarse-grained conglomerate of the Upper Topanga Formation. The shallower depth weathered rock is generally dark and yellowish brown, greenish gray, and grayish brown in color. With increasing depth, the rock is gray to dark gray in color. The rock is moderately hard to very hard, moist, and well bedded. The bedrock consists of well bedded sandstone and siltstone from the Upper Topanga Formation. A pyroclastic as well as conglomerate beds were identified. Bedding consistently dips to the north and northeast from 42 to 62 degrees.

(b) *Expansive Soils*

Expansive soils are soils that swell when subjected to moisture and shrink when dried. Expansive soils are typically associated with clayey soils. When not addressed, soil expansion can have adverse effects on structures. The field soil classifications and laboratory testing conducted for the Geotechnical Report indicated that the on-site geologic materials have a very low to low potential for expansion.¹⁹

(c) *Groundwater*

Groundwater seepage was identified in eight borings, and the depth to water seepage ranged from 19 to 36 feet. The bedrock that underlies the Project Site is poorly bedded and slightly fractured. In general, water will follow bedding and fracture partings, and water will flow generally to the southwest and northeast. Fluctuations in the groundwater level may occur due to variations in rainfall, temperature, and other factors and may occur across the Project Site.

¹⁸ Geotechnologies, Inc., *Updated Geotechnical Engineering Investigation*, Proposed Hilton Universal City Expansion Project, 555 Universal Hollywood Drive, Los Angeles, California, September 2022. See Appendix E-1 of this Draft EIR. p.13

¹⁹ Geotechnologies, Inc., *Updated Geotechnical Engineering Investigation*, Proposed Hilton Universal City Expansion Project, 555 Universal Hollywood Drive, Los Angeles, California. September 2022. See Appendix E-1 of this Draft EIR. p.31.

Based on the Seismic Hazard Zone report for the Burbank Quadrangle,²⁰ depth contours that identify the historically highest groundwater level are not shown within 0.3 mile of the Project Site. The absence of data regarding the historically highest groundwater level indicates that the underlying geologic materials are not of sufficient permeability to transmit water and a singular groundwater level is not applicable to the Project Site. Refer to Section IV.G, *Hydrology and Water Quality*, of this Draft EIR for a detailed discussion regarding groundwater seepage encountered on the Project Site and the ability of geologic materials on the Project Site to transmit water.

Caving did not occur in the borings or test pits and is not anticipated in the bedrock. However, where seepage occurs in fractured rock zones, some sloughing may occur.

(2) Geologic Hazards

(a) *Faulting and Seismicity*

A fault is a fracture in the crust of the earth along which rocks or sediment on one side has moved relative to those on the other side.²¹ Faults are the result of excessive strain cause by compression or extension within the earth's crust over long periods of time. A fault trace is the line on the earth's surface representing the fault location. Surface rupture occurs when movement along a fault causes ground displacement at the surface. Fault rupture may occur suddenly during an earthquake or slowly in the form of a fault creep. Sudden displacements are more damaging to structures because they are accompanied by shaking. Fault creep is the slow displacement (movement) of the earth's crust.

Buried, or blind, thrust faults are faults that do not rupture all the way up to the surface, leaving no evidence on the ground.²² Precisely because they are buried, their existence is usually not known until they produce an earthquake. In the southern California area, buried thrust faults are typically defined broadly based on an analysis of the seismic wave recordings of hundreds of small and large earthquakes.

Terms, such as "potentially active" and "inactive," have been commonly used in the past to describe faults that do not meet the State Mining and Geology Board (SMGB) definition of "active fault." However, these terms have the potential to cause confusion from a regulatory perspective as they are not defined in the Alquist-Priolo Earthquake Fault Zoning Act and may have other non-regulatory meanings in the scientific literature or in other regulatory environments. Below are terms that provide added precision when used in classifying faults regulated by the Alquist-Priolo Earthquake Fault Zoning Act.

²⁰ California Division of Mines and Geology, 1998, Seismic Hazard Zone Report for the Burbank (7.5 Minute) Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 016, 63 pages.

²¹ CGS, Earthquake Fault Zones, A Guide For Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California, Special Publication 42, 2018.

²² USGS Website, Earthquake Hazards Program, Earthquake Glossary, <https://earthquake.usgs.gov/learn/glossary/?term=blind%20thrust%20fault>, accessed September 2022.

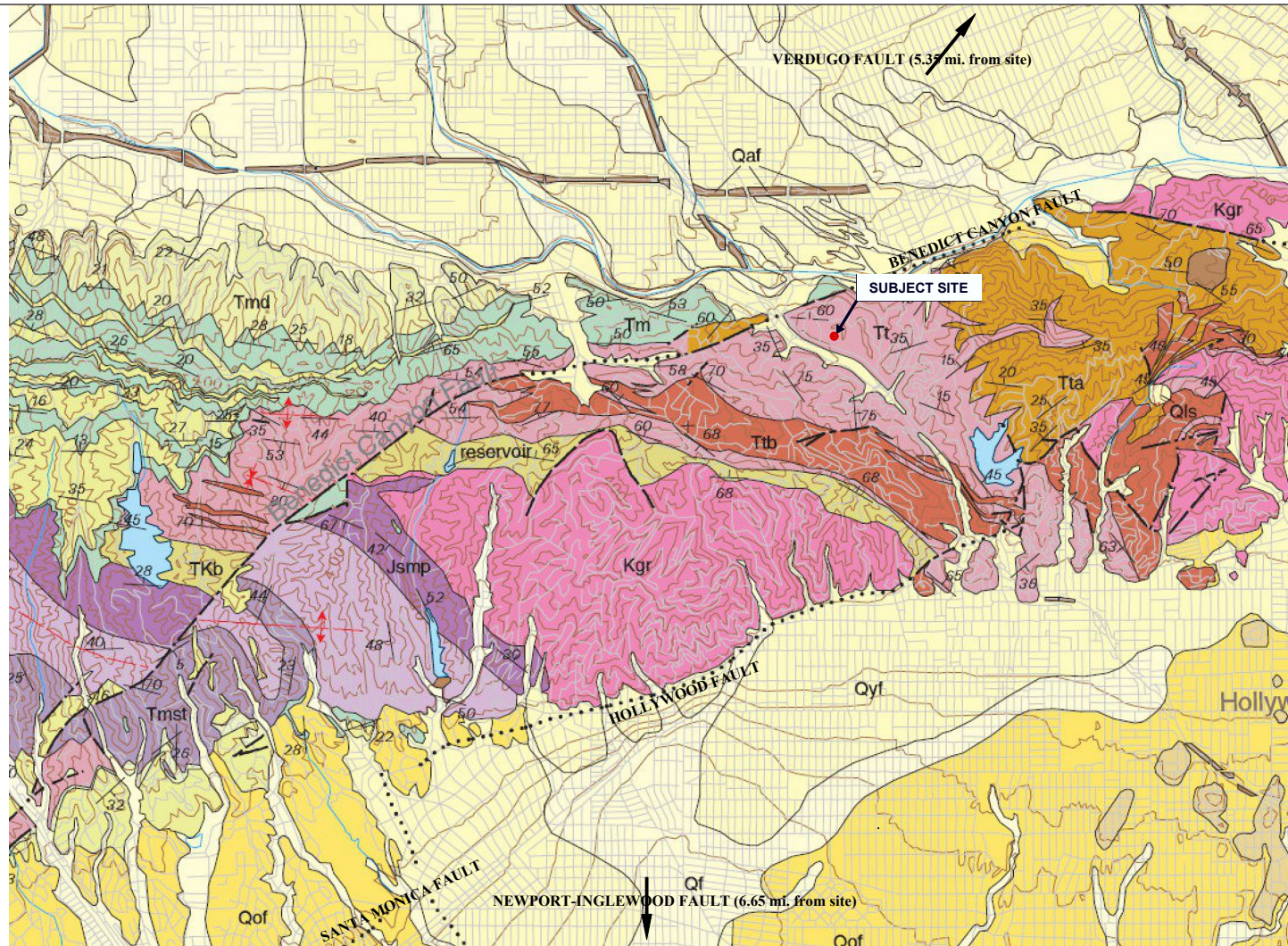
Faults are classified into three categories on the basis of the absolute age of their most recent movement:

- 1) Holocene-active faults: Faults that have moved during the past 11,700 years. This age boundary is an absolute age (number of years before present).
- 2) Pre-Holocene faults: Faults that have not moved in the past 11,700 years and, thus, do not meet the criteria of “Holocene-active fault” as defined in the Alquist-Priolo Earthquake Fault Zoning Act and SMGB regulations. This class of fault is not regulated under the Alquist-Priolo Earthquake Fault Zoning Act.
- 3) Age-undetermined faults: Faults where the recency of fault movement has not been determined. Faults can be “age-undetermined” if the fault in question has simply not been studied in order to determine its recency of movement. Faults can also be age-undetermined due to limitations in the ability to constrain the timing of the recency of faulting. Examples of such faults are instances where datable materials are not present in the geologic record, or where evidence of recency of movement does not exist due to stripping (either by natural or anthropogenic processes) of Holocene-age deposits. Within the framework of the Alquist-Priolo Earthquake Fault Zoning Act, age-undetermined faults within regulatory Earthquake Fault Zones are considered “Holocene-active” until proven otherwise.

Earthquake Fault Zones are regulatory zones (also known as Alquist-Priolo Earthquake Fault Zones) that encompass traces of Holocene-active faults to address hazards associated with surface fault rupture. Earthquake Fault Zones are delineated by the state Geologist and implemented by lead agencies through permitting, inspection and land-use planning activities (PRC Chapter 7.5, Section 2621). The Project Site is not located within an Alquist-Priolo Earthquake Fault Zone.

The location of the Project Site with respect to regional faults with the potential for future seismic activity is provided in **Figure IV.E-1, *Regional Faults Map***. As described below, the nearest significant active fault to the Project Site is the Hollywood Fault, which is located approximately 2.3 miles south of the Project Site. Other regional faults are described below in order of proximity to the Project Site.

The Benedict Canyon Fault is located approximately 570 feet northwest of the Project Site. The Benedict Canyon Fault strikes northeast across the Santa Monica Mountains from the area of Sepulveda Boulevard at Sunset Boulevard, where it is exposed in Cretaceous-age sandstone, to the foothills along the north flank of the Santa Monica Mountains area, east of Universal Studios. The fault varies from sharp and well-defined, where it clearly offsets Miocene sedimentary and volcanic units, to more broad and diffused, where it trends through the Jurassic-age Santa Monica Slate. The mapped trace of the Benedict Canyon Fault extends northward from the Santa Monica Mountains into the southeastern San Fernando Valley. No direct evidence of movement has been observed since late Quaternary time, and, therefore, this fault is not considered active by the CGS.



LEGEND

Qaf: Artificial Fill
 Qa: Alluvium
 Qf: Alluvial-Fan Deposits
 Qof: Old Alluvial-Fan Deposits
 Qoa: Old Alluvium

Tm: Modelo Formation
 Tt: Topanga Group
 TKb: Sedimentary Rock in the Beverly Hills Area
 Kt: Tuna Canyon Formation
 Jsm: Santa Monica Slate

— Fault - Solid where accurately located, dashed where approximately located, dotted where concealed, queried where location or existence uncertain. includes strike slip, normal, reverse, oblique, and unspecified slip.

NOTE: Elysian Park Fault not shown due to absence of surface break.



SOURCE: Geotechnologies, Inc., November 2020

Hilton Universal City Project

Figure IV.E-1
 Regional Faults Map

The potentially active Santa Monica-Hollywood Fault is comprised of various segments with several strands on each segment. The Hollywood Fault is located approximately 2.3 miles south of the Project Site along the south edge of the eastern Santa Monica Mountains. The Hollywood Fault is considered to be capable of a Mw 6.6 earthquake. Similarly, the Santa Monica Fault is located approximately 3.3 miles southwest of the Project Site along the southern edge of the Santa Monica Mountains. The Santa Monica Fault is considered to be capable of a Mw 7.0 earthquake.

The Elysian Park Thrust Fault is located approximately 3.9 miles southeast of the Project Site, with the Elysian Park Anticline located approximately 1.3 miles northeast of the Project Site. This fault is considered to be capable of a Mw 6.7 earthquake. Due to the lack of ground surface displacement caused by this fault, it is not considered an active fault by the CGS and is not shown on Figure IV.E-1.

The Verdugo Fault, which is located approximately 5.4 miles to the northeast of the Project Site, trends along the base of the southwestern side of the Verdugo Mountains. The Verdugo Fault is capable of producing a Mw 6.9 earthquake. Although considered active by the County of Los Angeles Department of Public Works, the City of Los Angeles Department of Public Works, and the United States Geologic Survey (USGS), the fault is not designated within an Earthquake Fault Zone by the CGS. Thus, the fault is not considered active by the CGS due to the lack of surface displacement.

The Newport-Inglewood Fault is located approximately 6.7 miles southwest of the Project Site. The Newport-Inglewood Fault, which is considered active, extends southeastward from West Los Angeles across the Los Angeles Basin to Newport Beach and possibly offshore beyond San Diego. The fault extends for about 37 miles from the Santa Ana River to the Santa Monica Mountains. The Newport-Inglewood Fault is capable of producing a Mw 6.9 earthquake.

(b) Ground Surface Rupture

Surface rupture is defined as ground displacement that occurs along the surface trace of a fault during an earthquake. Based on research of available literature and the site reconnaissance by Geotechnologies, Inc. staff, there are no known active or potentially active faults underlying the Project Site. In addition, as indicated above, the Project Site is not located within an Alquist-Priolo Earthquake Fault Zone. Therefore, the potential for surface ground rupture at the Project Site is considered low.

(c) Site Stability – Liquefaction, Lateral Spreading, and Seismic Settlement

Liquefaction involves the temporary loss in strength of a saturated silty to cohesionless soil caused by the build-up of pore water pressure during cyclic loading, such as that

produced by an earthquake. Liquefaction-related effects include loss of bearing strength, amplified ground oscillations, lateral spreading, and flow failures.²³

According to the State of California Seismic Hazard Zones Map, the Project Site is not located in a potentially liquefiable area. This determination is based on groundwater depth records, soil type and distance to a fault capable of producing a substantial earthquake. Due to the non-liquefiable characteristics of the underlying bedrock, the potential for lateral spreading is considered remote for the Project Site. In addition, the potential for dynamic dry settlement of the underlying bedrock and compacted fill soil is considered remote.

(d) *Landslide and Seismically Induced Slope Instability*

Landslides are movements of surface material down a slope.²⁴ The Project Site is located at the end of a promontory that descends to the west, south, and east. The top of the promontory is approximately 707 feet amsl, and the on-site low point is approximately 670 feet amsl, with an overall elevation change of approximately 37 feet across the Project Site.

The Project Site is located within a Cluster of Small Shallow Surficial Landslides area, as shown in the Los Angeles General Plan Safety Element, Exhibit C, Landslide Inventory and Hillside Areas in the City of Los Angeles.²⁵

The descending slopes that surround the Project Site are covered by a thin layer of fill soil. No indications of slope instability were noted during the field exploration. As indicated above, the Project Site is underlain by bedrock of the Upper Topanga Formation. The rock is moderately hard to very hard and bedding dips moderately to the north and northeast, which is favorable from the standpoint of stability on the promontory.²⁶ No indications of slope instability, such as offset hardscape features, hummock topography (a small knoll or mound above ground) on the slope, or tilted trees were noted during the field investigation.

As discussed in the Geotechnical Report, the only indication of slope instability is a location identified as “shallow failures and creep” located off-site and north of the North Plaza. According to the Geotechnical Report, this area does not represent a concern to the proposed development as it is located offsite and to the north of the Project Site.²⁷ Additionally, the slope stability analysis identified the slope to have a factor of safety

²³ Geotechnologies, Inc., *Updated Geotechnical Engineering Investigation*, September 2022. Appendix E-1. P. 19-20.

²⁴ USGS, Earthquake Hazards Program, Earthquake Glossary, <https://earthquake.usgs.gov/learn/glossary/?term=landslide>. Accessed September 2022.

²⁵ City of Los Angeles Department of City Planning, General Plan Safety Element, Exhibit C, Landslide Inventory and Hillside Areas in the City of Los Angeles, adopted November 26, 1996.

²⁶ This is based on Boring 2 drilled by Geotechnologies, Inc. as part of the 2017 Geotechnical Investigation.

²⁷ Geotechnologies, Inc., *Updated Geotechnical Engineering Investigation*, September 2022. Appendix E-1. p. 21.

greater than the minimum required for both static and pseudostatic conditions. A factor of safety is computed using the limit equilibrium method, with slope stability being determined by the equilibrium of an inertial force being applied to a potential sliding mass. A factor of safety greater than 1.00 suggests that the slope is stable. In pseudostatic slope stability analysis, a horizontal earthquake-induced inertial force is applied to the potential sliding mass to represent the destabilizing effects of the earthquake shaking.²⁸

The Seismic Hazards Zones Map for the Burbank Quadrangle indicates the southerly descending slope below the area of the proposed Hotel Expansion Building is susceptible to seismic induced landslides. Because of the slope on the Project Site, a slope stability analysis was required for the property per LADBS Information Bulletin P/BC 2017-49. A slope stability analysis was prepared for the analysis in the Geotechnical Report dated September 14, 2022. Based on the results of the slope stability analysis, the potential for earthquake induced landslides is not a concern as all of the wall configuration analyses identified a factor of safety exceeding the minimum thresholds required by LADBS. These are a static minimum factor of safety value of 1.5 and the pseudostatic minimum factor of safety value of 1.0. The results of the analysis are presented in further detail within the Project Impacts discussion below.

(e) *Erosion*

Soil erosion refers to the process by which soil or geologic material is loosened or dissolved and removed from its original location. Erosion can occur by varying processes and may occur in an area where bare soil is exposed to wind or moving water (both rainfall and surface runoff). The processes of erosion are generally a function of material type, terrain steepness, rainfall or irrigation levels, surface drainage conditions, and general land uses. Topsoil is used to cover bare surface areas for the establishment and maintenance of vegetation due to its high concentrations of organic matter and microorganisms.

The Project Site is located in a highly urbanized area of Los Angeles and is currently developed with the Existing Hotel and associated improvements. Negligible, if any, native topsoil occurs on the Project Site as it is currently developed with structures, access roads, and associated facilities, including a pool area and landscaping.

(f) *Paleontological Resources*

As discussed above, fill at the Project Site is underlain by the Topanga Formation. This geologic unit is discussed below from a paleontological perspective based on the results of the Paleontological Resources Assessment Report (Appendix E-2).

Fossils found in the sedimentary portions of the Topanga Formation (sandstone and clay shale at the Project Site) include numerous invertebrate and vertebrate remains from both

²⁸ Bray & Travasarou, Pseudostatic Slope Stability Procedure, 2011.

marine and terrestrial settings, including sharks, bony fishes, birds, whales, dolphins, and land mammals.^{29,30,31,32}

A database search for records of fossil localities within the Project Site was conducted by the Natural History Museum of Los Angeles County (LACM) on March 23, 2018. The database search results indicated that no known localities exist within the Project Site; however, a couple of vertebrate fossils from the Topanga Formation are known from discoveries within less than 0.50 mile of the Project Site (LACM 6969 and LACM 1084). These localities have yielded specimens of fish fossils (containing specimens of grunion (*Atherinidae*), herrings (*Etrungus*, *Ganolytes*, and *Sardinella*), codlets (*Bregmacerotidae*), bigeyes (*Priacanthidae*), croakers (*Sciaenidae*), mackerels (*Scombridae*), and boarfishes (*Caproidae*)) and a member of the peculiar quadrupedal marine mammals called the *Desmostylia* from unknown depths.

The Upper Topanga Formation possesses high paleontological sensitivity based on the Society for Vertebrate Paleontology (SVP) guidelines, which are further described below. No paleontological resources have been previously identified within the Project Site based on the record search through the LACM in 2018.

3. Project Impacts

a) Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, a project would have a significant impact related to geology and soils if it would:

- 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 Geology³³ Special Publication 42;***
 - ii. ***Strong seismic ground shaking;***

²⁹ Morton, D.M. and F.K. Miller, Geologic Map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California, U.S. Geological Survey Open-File Report 2006-1217, 2006.

³⁰ Boessenecker, R.W. and M. Churchill, The oldest known fur seal. *Biology Letters* 11:20140835, 2015.

³¹ Campbell, R.H. and R.F. Yerkes, Geologic guide to the stratigraphy & structure of the Topanga Group, central Santa Monica Mountains, Southern California. The Los Angeles Basin Geological Society, Guidebook Number 49, 1980.

³² Whistler, D.P. and E.B. Lander, New late Uintan to early Hemingfordian land mammal assemblages from the undifferentiated Sespe and Vaqueros Formations, Orange County, and from the Sespe and equivalent marine formations in Los Angeles, Santa Barbara, and Ventura Counties, Southern California. *Bulletin of the American Museum of Natural History* 279, 2003, pp. 231-268.

³³ Now the CGS.

iii. Seismic-related ground failure, including liquefaction;

iv. Landslides;

b) Result in substantial soil erosion or the loss of topsoil;

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;

d) Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property;³⁴

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 wastewater; or

f) Directly or indirectly destroy a unique paleontological resource or site of unique geologic feature.

For this analysis, the Appendix G Thresholds are relied upon. The analysis utilizes factors and considerations identified in the City's 2006 L.A. CEQA Thresholds Guide, as appropriate, to assist in answering the Appendix G Threshold questions. The factors to evaluate geology and soils impacts include:

- 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.
- 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.
- Landform Alteration
 - Cause one or more distinct and prominent geologic or topographic features to be destroyed, permanently covered, or materially and adversely modified as a result of the project. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands.

³⁴ The CBC, based on the International Building Code and the now defunct Uniform Building Code, no longer includes a Table 18-1-B. Instead, Section 1803.5.3 of the CBC describes the criteria for analyzing expansive soils.

- Paleontological Resources
 - Whether, or the degree to which, the project may result in the permanent loss of, or loss of access to, a paleontological resource.
 - Whether the paleontological resource is of regional or statewide significance.

b) Methodology

(1) Geology and Soils

The analysis of impacts associated with geology and soils is based largely on the Geotechnical Report prepared for the Project Site, included in Appendix E-1 of this Draft EIR. As discussed above, information, conclusions, and recommendations in the Geotechnical Report are based on field explorations on the Project Site undertaken in association with the geotechnical investigation, review of the results of the field explorations undertaken on the Project Site in earlier geotechnical investigations, and review of these prior geotechnical investigations.

The investigations evaluated the underlying geologic and soil conditions to determine the potential for the Project to directly or indirectly cause hazardous conditions, and identified preliminary foundation requirements needed to ensure that new building construction and surface parking would be safe. Site borings and trenches were drilled or excavated at various locations across the Project Site to ensure coverage across the entire Project Site and evaluate conditions at all locations where construction would occur. The Geotechnical Investigation provides sufficient detail to determine whether the Project Site is suitable for the intended use and whether more detailed studies are required to address specific geological issues. The Geotechnical Investigation also identifies considerations to be taken into account in the design of building foundations.

According to LAMC Section 91.1803, a Final Geotechnical Report must be prepared based on final construction and building plans prepared by the Applicant and approved by the City prior to the issuance of building permits to construct the Project. Based on the ground conditions and building design, the Final Geotechnical Report would include specific recommendations for site preparation, excavation, foundation design and shoring/retaining wall specifications.

The Project would be regulated by the various laws, regulations, and policies summarized in the Regulatory Framework subsection above. Compliance by the Project with applicable federal, State, and local laws and regulations is assumed in this analysis, and local and State agencies are expected to continue to enforce applicable requirements to the extent that they do so now.

(2) Paleontological Resources

The analysis of paleontological resources in this section of the Draft EIR is summarized from the Paleontological Resources Assessment Report (contained in Appendix E-2 of

this EIR) and is based on the SVP Guidelines, which are discussed under the Regulatory Framework. The analysis is based on a review of the LACM's paleontological records search results and other documentation regarding disturbances to the Project Site and its subsurface geological conditions (e.g., the Geotechnical Report and LADBS Approval Letter provided in Appendix E-1 of this Draft EIR). The objective of the record search through the LACM was to determine the geological formations underlying the Project Site, whether any paleontological localities have previously been identified within the Project Site or in the same or similar formations near the Project Site, and the potential for excavations associated with the Project to encounter paleontological resources. These methods are consistent with the SVP guidelines for assessing the importance of paleontological resources in areas of potential environmental effect.

Although no known resources were identified within the Project Site from the LACM search, this does not preclude the possibility of previously unknown buried paleontological resources within the Project Site that may be impacted during construction of the Project. The potential to encounter paleontological resources during construction at the Project Site was determined by reviewing the results of the records search, the depth of native versus fill soils, land use history, past disturbances, and the proposed excavation parameters for the Project.

Based on the significance definitions provided above under Regulatory Framework, all identifiable vertebrate fossils have scientific value and are, therefore, considered scientifically significant. This position is maintained because vertebrate fossils are relatively uncommon, and only rarely will a fossil locality yield a large number of specimens of the same genus; thus, abundance of fossils is not a requirement for designating a given rock unit as a significant fossiliferous deposit. Therefore, every vertebrate fossil found has the potential to provide important new scientific information regarding the taxon it represents, its paleoenvironment, and/or its distribution. Furthermore, all geologic units that have previously yielded vertebrate fossils are considered to have high sensitivity for the presence of fossils in the future. Identifiable plant and invertebrate fossils are considered significant if found in association with vertebrate fossils or if defined as scientifically significant by project paleontologists, specialists, or local government agencies.

Paleontological sensitivity is the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit; for this reason, paleontological sensitivity depends on the known fossil data collected from the entire geologic unit, not just a specific survey. The SVP³⁵ defines four categories of

³⁵ SVP, Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, 2010.

paleontological sensitivity or, per the SVP guidelines, potential, for the presence of paleontological resources – high, low, undetermined, and no potential – as follows:

- **High Potential.** Rock units that have yielded vertebrate or significant invertebrate, plant, or trace fossils are considered to have a high potential for containing additional significant paleontological resources. Rock units classified as having high potential for producing paleontological resources include, but are not limited to, (1) sedimentary formations and some volcanoclastic formations (e. g., ashes or tephra [rock fragments and particles from volcanic eruptions]), (2) some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, (3) and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. The latter includes middle Holocene and older, fine-grained fluvial sandstones, argillaceous (i.e., clay-bearing) and carbonate-rich paleosols (rock units representing former, now lithified, soils), cross-bedded point bar sandstones, fine-grained marine sandstones, etc.
- **Low Potential.** Some rock units have been concluded to contain low potential for yielding scientifically significant fossils based on field survey findings or reported reports in the paleontological literature by qualified professional paleontologists. These conclusions may be based on the fact that certain rock units are poorly represented by fossil specimens in institutional collections, leading to the determination that they are not generally fossil-bearing or, on general scientific consensus, that a given rock unit only preserves fossils in rare circumstances and their presence of fossils is an exception in such units, not the rule, as in basalt flows or colluvium deposited during Holocene time. Rock units with low potential typically do not require impact mitigation measures to protect fossils.
- **Undetermined Potential.** Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before development of a paleontological resource impact mitigation program. In cases where no subsurface data are available, strategically located excavations into subsurface stratigraphy can determine paleontological potential.
- **No Potential.** Some rock units have no potential to contain significant paleontological resources. An example is high-grade metamorphic rocks, which have typically been distorted or recrystallized through intense processes of heat or other stresses (e.g., gneisses and schists). Likewise, plutonic igneous rocks, such as granite, are considered to have no potential to yield fossils as they are formed from (liquid) magma that has dissolved the original rock matrix, including any fossils it may once have contained. Rock units with no potential to yield fossils require no protections; no impacts are anticipated on such units, and no mitigation is required.

For geologic units with high potential, full-time monitoring is appropriate during any project-related ground disturbance because of the risk to paleontological resources. For geologic units with low potential, protection or salvage efforts is not generally required because of the low risk of encountering paleontological resources. For geologic units with undetermined potential, accepted professional practice recommends field surveys conducted by a qualified vertebrate paleontologist to determine the paleontologic potential of the rock units present in the study area.

c) Project Design Features

No specific Project Design Features are proposed with regard to geology, soils, seismicity, or paleontological resources.

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

As discussed above in the Existing Conditions section, the site-specific geotechnical investigation concluded that there is no active faulting beneath the Project Site. In addition, the Project Site is not located within an Alquist-Priolo Earthquake Fault Zone. **Therefore, because the geotechnical investigation concluded there is no active faulting beneath the Project Site, the Project would not directly or indirectly cause substantial adverse effects, including risk of loss, injury, or death involving fault rupture, and, as such, the impact related to fault rupture would be less than significant.**

(2) Mitigation Measures

Impacts regarding fault rupture were determined to be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Impacts regarding 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 discussed above, the Geotechnical Report concluded that there is no active faulting beneath the Project Site. However, the Project Site is located within the seismically active region of southern California. The level of ground shaking that would be experienced at the Project Site from regional faults would be a function of several factors, including earthquake magnitude, type of faulting, rupture propagation path, distance from the epicenter, earthquake depth, duration of shaking, site topography, and site geology.

The Project would not involve mining operations, boring of large areas, or the extraction or injection of oil or groundwater that could create unstable seismic conditions that would exacerbate potential on-site environmental conditions or otherwise directly or indirectly cause ground shaking. Moreover, as is true for any new project development in Los Angeles, the Project's building design and construction must conform to the current seismic design provisions of the Los Angeles Building Code, which incorporates relevant provisions of the CBC. The Los Angeles Building Code incorporates the latest seismic design standards for structural loads and materials to accommodate maximum ground accelerations expected from known faults. The Geotechnical Report provided preliminary site-specific design recommendations and parameters regarding grading and earthwork, temporary excavation and shoring, drainage, foundations, floor slab support, basement walls, and pavement design. The Geotechnical Report concluded that development of the Project is feasible from a geotechnical perspective, provided that the applicable regulations are met, and construction and design are performed in accordance with its recommendations, and that a design-level geotechnical report (or Final Geotechnical Report) will be required to develop geotechnical recommendations for final design. Per the Los Angeles Building Code and CBC requirements, prior to issuance of a grading permit, a qualified geotechnical engineer must prepare and submit to the LADBS a Final Geotechnical Report that includes site-specific design recommendations for seismic safety and design requirements for foundations, retaining walls/shoring and excavation to meet applicable state and City regulatory requirements.

Thus, compliance with applicable regulatory requirements (i.e., the Los Angeles Building Code and the CBC) and incorporation of these recommendations would reduce the potential for significant damage to structures resulting from strong seismic ground shaking and the exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death, to the maximum extent practical. **Therefore, based on the above, development of the Project would not directly or indirectly cause substantial adverse effects, including risk of loss, injury, or death involving strong seismic ground shaking hazards, and, as such, the impact related to ground shaking would be less than significant.**

(2) Mitigation Measures

Impacts regarding strong seismic ground shaking were determined to be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Impacts regarding 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, according to the State of California Seismic Hazard Zones Map, the Project Site is not located in a potentially liquefiable area. This determination is based on groundwater depth records, soil type and distance to a fault capable of producing a substantial earthquake. Based on the Geotechnical Report, due to the non-liquefiable characteristics of the underlying bedrock, the potential for lateral spread is considered remote for the Project Site. In addition, the potential for dynamic dry settlement of the underlying bedrock and compacted fill soil is considered remote. In addition, the City's ZIMAS website also indicates the Project Site is not subject to liquefaction hazards.

According to the Geotechnical Report, site-specific liquefaction analysis indicates that the improvements proposed by the Project would be in the moderately hard to very hard bedrock of the Upper Topanga Formation. The bedrock is considered non-liquefiable due to its moderately hard consistency and long geologic history. Therefore, the bedrock is not considered susceptible to liquefaction or lateral spreading.

Per City Building Code requirements, prior to the issuance of a grading permit, a qualified geotechnical engineer must prepare and submit to the LADBS a Final Geotechnical Report that includes site-specific design recommendations for seismic safety and design requirements for foundations, retaining walls/shoring, and excavation to meet applicable State and City regulatory requirements. **Therefore, based on the above, development of the Project would not directly or indirectly cause potential substantial adverse effects, including risk of loss, injury, or death involving seismic-related ground failure hazards, including liquefaction, and, as such, the impact related to seismic-related ground failure would be less than significant.**

(2) Mitigation Measures

Impacts regarding seismic-related ground failure were determined to be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Impacts regarding seismic-related ground failure 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

(1) Impact Analysis

As indicated above, the Project Site is located within a Cluster of Small Shallow Surficial Landslides area and it includes multiple slopes that were analyzed for landslide potential in the Geotechnical Report.³⁶ During the field investigation, no indications of slope instability (i.e., soil cracks, scraps, scares, or offset drain terraces) were noted. However, the Earthquake Zones of Required Investigation Map indicated the southerly descending slope below the Hotel Expansion Building may be susceptible to seismic induced landslides.³⁷ Therefore, as discussed above, a slope stability analysis was performed for the Project. The analysis was conducted using the most critical sections in terms of slope inclination, the orientation of the surface that separates each successive layer of a stratified rock from its preceding layer (known as the bedding plane orientation) and surcharge to the slope, that is, the weight of objects found on the slope body. All other slopes of flatter gradient or lesser heights or more favorable geologic conditions are considered stable. Slope stability analyses were not performed for the redevelopment in the North Plaza since the development would be within the existing footprint of current development and the excavation of soils from the Project Site during construction would reduce the overall amount of soil weight that is present below the Project Site and the proposed structure would be lighter than the soil to be removed.

The slopes on which construction would occur are comprised of artificial fill, alluvium, and bedrock of the Topanga Formation. For the Hotel Expansion Building, on the western end of the addition, the structure would extend over existing fill soil. The depth to bedrock may exceed 32 feet from the existing grade and 57 feet from the proposed finished floor elevation. Due to the limited construction area and proximity to property lines, removal and re-compaction of the existing fill for foundation support would not be feasible. Therefore, piles into bedrock would be needed that extend through a newly-created fill wedge and the existing fill. The stability analysis indicates that the existing slope would have a factor of safety in excess of the City's minimum requirement of 1.5 under conditions of no external motions or forces (static conditions) and 1.0 under conditions

³⁶ City of Los Angeles Department of City Planning, General Plan Safety Element, Exhibit C, Landslide Inventory and Hillside Areas in the City of Los Angeles, adopted November 26, 1996.

³⁷ Geotechnologies, Inc., *Updated Geotechnical Engineering Investigation*, September 2022. Appendix E-1. p. 20-21.

that represent horizontal earthquake-induced inertial force (pseudostatic conditions). Therefore, the potential of earthquake -induced landslides was determined not to be a concern and impacts would be less than significant.

In the North Plaza, fill soils would be removed as a result of excavation. Based on the Geotechnical Investigation, the structure may be supported on conventional foundations bearing in the bedrock. Hard, cemented beds of rock may be encountered, and seepage of groundwater may occur from fractures of coarse-grained beds at the southern end of the excavation.

With regard to surficial stability of the easterly-ascending slope above the service road, the slope has a 1.75:1 (horizontal to vertical) inclination. Fill thickness ranges from 1.5 to 13.5 feet. Based on the surficial stability analysis for this slope, which is beyond the proposed grading limits, the factor of safety is 1.49 and therefore below the City's minimum requirement of 1.5. However, the Geotechnical Investigation recommends that the retaining wall be designed to withstand the impact and retention of soil from a small mudslide. According to LADBS *Slope Stability Evaluation and Acceptance Standards*:³⁸

Minor additions or alterations may be made to existing structures where acceptable devices are provided to mitigate potential damage from failure of adjacent slopes and where the hazard to life or property is not increased.

As such, the proposed retaining wall would address potential damage from a minor mudslide at this slope outside of the proposed grading limits. Retaining walls would need to be supported on deepened footings or friction piles.³⁹ In accordance with the City Building Code requirements, prior to the issuance of a grading permit, a qualified geotechnical engineer must prepare and submit to the LADBS a Final Geotechnical Report that includes site-specific design recommendations to address potential landslide issues on the Project Site. Therefore, the consideration and design of retaining wall would be included in this regulatory requirement. However, even without implementation of the proposed retaining wall, the Project would not result in a substantial adverse effect resulting in risk of loss, injury, or death as a result of landslides due to this slope.

All new hardscape areas would be supported on a newly created compacted fill slab that bears directly on the bedrock.

With regard to groundwater intrusion during construction, while water seepage was identified above the proposed finish floor elevation of the parking levels, it is anticipated that the seepage rate would be low because a singular groundwater level does not occur on the Project Site and the underlying geologic materials are not of sufficient permeability to transmit groundwater. If such seepage occurs, the water that would emanate from

³⁸ LADBS Document P/BC 2020-049: Slope Stability Evaluation and Acceptance Standards, 2020

³⁹ Friction piles are typically used for large structure and in situations where soil may be subject to excessive settlement. Friction, or floating, piles use the frictional resistance force between the pile surface and adjacent soil to transfer the load of the structure.

fractures and along bedding planes that are daylighted in the excavation walls would be collected at the base of the wall and directed to appropriate disposal facilities. Some seepage may occur in the excavation for the parking along the service road. Should this potential seepage occur during construction activities, temporary dewatering would be required. Dewatering operations are practices that discharge groundwater that must be removed from a work location into the storm drain system to proceed with construction. Temporary dewatering should consist of gravel-filled drainage trenches leading to a sump area. Further consideration of groundwater and dewatering are also addressed in Section IV.G, *Hydrology and Water Quality*, of this Draft EIR.

In summary, the slope stability analysis identified the slope to have a factor of safety greater than the minimum required for both static and pseudostatic conditions. The structures would be supported with conventional foundation or mat foundations bearing on the bedrock and cast-in-place friction piles into the bedrock for the western end of the Hotel Expansion Building. In addition, in accordance with Los Angeles Building Code requirements, prior to the issuance of a grading permit, a qualified geotechnical engineer must prepare and submit to the LADBS a Final Geotechnical Report that includes site-specific design recommendations to address potential landslide issues on the Project Site. However, as identified in the Geotechnical Investigation, no such concerns regarding landslide potential exist. Application of appropriate engineering controls and compliance with applicable code and regulatory requirements for planned excavation and construction activities on-site would preclude geologic hazards associated with slope instability at the Project Site and would protect surrounding developments. **Therefore, development of the Project would not directly or indirectly cause potential substantial adverse effects, including risk of loss, injury, or death involving landslides, and impacts related to landslides would be less than significant.**

(2) Mitigation Measures

Impacts regarding landslides were determined to be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Impacts regarding landslides 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 b) Would the Project result in substantial soil erosion or the loss of topsoil?

(1) Impact Analysis

(a) Construction Impacts

Project construction would result in ground surface disturbance during excavation, grading, and trenching that would create the potential for erosion to occur. However, wind

erosion would be minimized through implementation of the soil stabilization measures required by SCAQMD Rule 403 (Fugitive Dust), such as daily watering (see Section IV.A, *Air Quality*, of this Draft EIR for further discussion). The potential for water erosion would be reduced by the implementation of standard erosion control measures during site preparation and grading activities, as discussed in more detail under Section IV.G, *Hydrology and Water Quality*, of this Draft EIR, since the Project would be subject to existing regulations associated with the protection of water quality. Construction activities would be conducted in accordance with applicable City standard erosion control practices required pursuant to the CBC and the requirements of the National Pollutant Discharge Elimination System (NPDES) Construction General Permit issued by the Los Angeles Regional Water Quality Control Board (LARWQCB), as applicable. In accordance with these requirements, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared that incorporates best management practices (BMPs) to control water erosion during the Project's construction period. **Thus, in conjunction with compliance with applicable code and regulatory requirements, the Project would not result in substantial erosion or loss of topsoil, and, as such, impacts related to erosion or loss of top soil would be less than significant.**

(b) *Operational Impacts*

Once constructed, all surfaces would be covered by pavement, landscaping, or buildings. Therefore, erosion or loss of topsoil would not occur. **As such, Project operation would have no impact related to erosion and loss of topsoil.**

(2) *Mitigation Measures*

Impacts regarding substantial soil erosion or the loss of topsoil during Project construction were determined to be less than significant, and no impact would occur during Project operation. Therefore, no mitigation measures are required.

(3) *Level of Significance After Mitigation*

Impacts regarding substantial soil erosion or the loss of topsoil during Project construction were determined to be less than significant without mitigation, and no impact would occur during Project operation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

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*

(a) *Construction Impacts*

As discussed above in Threshold (a)i through (a)iii, the Project Site is not susceptible to liquefaction, lateral spreading, and settlement. However, as discussed in Threshold (a)iv,

the Project Site is located within a Cluster of Small Shallow Surficial Landslides area.⁴⁰ Based on review of geologic maps and the Geotechnical Investigation, the only indication of slope instability is a location identified as “shallow failures and creep” located off-site and north of the North Plaza and impacts related to fault rupture, seismic ground shaking, seismic ground failure including liquefaction, and landslides were determined to be less than significant.

Excavation within the Project Site during construction would vary. Excavation for the expanded parking garage, shoring, and ancillary uses, or improvements is planned at depths up to 50 feet below ground surface (bgs). Excavation would require shoring measures to provide a stable working area. Excavation at the south side of the Hotel Expansion Building would encounter daylighted bedrock and limited seepage from the bedrock is anticipated. The proposed mechanical room would require removal of a portion of the slab on the lowest level of the existing parking garage.

Excavation activities would remove localized loose surficial deposits, if any, and would cause disturbance of existing soils and could contribute to potential localized raveling or caving of excavated areas (e.g. the excavated side walls losing stability). A slope stability analysis was prepared for the Project and excavations on-site would require suitable engineered stabilization in accordance with applicable code and regulatory requirements. Application of appropriate engineering controls and compliance with applicable code and regulatory requirements for planned excavation and construction activities on-site would preclude geologic hazards associated with slope instability at the Project Site and would protect surrounding developments. All required excavations would be sloped and properly shored in accordance with the applicable provisions of the CBC incorporated into the Los Angeles Building Code to minimize the potential for site stability hazards during temporary excavation activities. Per the Los Angeles Building Code requirements, prior to issuance of a grading permit, a qualified geotechnical engineer must prepare and submit to the LADBS a Final Geotechnical Report that includes site-specific design recommendations for seismic safety and design requirements for foundations, retaining walls/shoring and excavation to meet applicable State and City code and regulatory requirements. As with the Geotechnical Investigation, the Final Geotechnical Report would recommend an appropriate shoring system, dewatering, retaining walls with subdrains or weepholes, and other suitable excavation engineering techniques.

Based on the above, development of the Project would not 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. Therefore, impacts associated with unstable geologic units or soils on the Project Site as a result of the Project would be less than significant.

⁴⁰ City of Los Angeles Department of City Planning, General Plan Safety Element, Exhibit C, Landslide Inventory and Hillside Areas in the City of Los Angeles, adopted November 26, 1996.

(b) Operational Impacts

Once constructed, all surfaces would be covered by pavement, landscaping, or buildings, which would not affect underlying ground conditions in any substantial way. **Therefore, the Project would have no impact related to unstable soil conditions.**

(2) Mitigation Measures

Impacts regarding unstable soils during Project construction were determined to be less than significant, and no impact would occur during Project operation. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Impacts regarding unstable soils during Project construction would be less than significant without mitigation, and no impact would occur during Project operation. 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 creating substantial risks to life or property?

(1) Impact Analysis*(a) Construction Impacts*

As discussed above, the field soil classifications and laboratory testing indicated that the on-site geologic materials have a very low to low potential for expansion.⁴¹ Reinforcing foundation systems beyond the minimum required by the City is, therefore, not required as per LADBS Foundation Design For Expansive Soils.⁴² However, even though the potential to encounter expansive soils is considered very low to low potential, the Final Geotechnical Report to be approved by LADBS would include site-specific design recommendations for addressing expansive soils, should they be encountered. Further, compliance with standard construction and engineering practices (i.e., on-site excavation requiring suitable engineered stabilization in accordance with the CBC) addressing expansive soils and building code regulations pertinent to foundation stability would ensure that expansive soils, if identified, are removed in a manner such that they do not create substantial risks to life or property. **Based on the above, development of the Project would not be located on expansive soils creating substantial risks to life or property. Therefore, impacts regarding expansive soils would be less than significant.**

⁴¹ Geotechnologies, Inc., *Updated Geotechnical Engineering Investigation*, Proposed Hilton Universal City Expansion Project, 555 Universal Hollywood Drive, Los Angeles, California, September 2022. See Appendix E-1 of this Draft EIR.

⁴² LADBS Document P/BC 2017-116 - Foundation Design For Expansive Soils, 2017.

(b) *Operational Impacts*

Once constructed, all surfaces would be covered by pavement, landscaping, or buildings, and on-site geologic materials that may have been susceptible to expansion would have been removed. **Therefore, the Project would have no impact related to expansive soil conditions.**

(2) *Mitigation Measures*

Impacts regarding expansive soils during Project construction would be less than significant, and no impact would occur during Project operation. Therefore, no mitigation measures are required.

(3) *Level of Significance After Mitigation*

Impacts regarding expansive soils during Project construction would be less than significant without mitigation, and no impact would occur during Project operation. 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 Subsection VI.7, *Effects Found Not to be Significant*, and in the Initial Study (**Appendix A**) of this Draft EIR, the Project would not use septic tanks or alternative waste water disposal systems. The Project would connect to the existing sewer system. **Therefore, no impact would occur with respect to Threshold (e), and 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*

(a) *Construction Impacts*

As the Project is in an urbanized developed location and involves improvements and redevelopment within an existing hotel property, there are no unique geologic features that would be affected by the Project. Therefore, no impacts to unique geologic features would occur, and this issue is not discussed further. Analysis regarding the potential for the Project to destroy unique paleontological resources is discussed further below.

Background research and analysis detailed in the Paleontological Resources Assessment Report, included in Appendix E-2, of this Draft EIR, was conducted for the Project Site. Although the records search resulted in no known localities within the Project Site, two vertebrate fossils are known from discoveries in similar sedimentary deposits in

Los Angeles and in nearby areas.⁴³ Given the discovery of significant fossil remains near the Project Site, and the results of the Geotechnical Investigation, which indicates that the Topanga Formation is found beneath the fill on the Project Site at depths as shallow as 1 foot in some areas, sediments present across the Project Site have high paleontological sensitivity as they are of an age to preserve fossils. Excavation within the Project Site during construction for parking, shoring, ancillary uses and other improvements is planned at depths up to 50 feet bgs, which would encounter high sensitivity Topanga Formation sediments with potential for fossils to be present in the subsurface.

Impacts to unique or significant paleontological resources could occur if Project-related ground disturbance encounters geologic units with high paleontological sensitivity, such as the Upper Topanga Formation. **Due to the high sensitivity of the Project Site to encounter paleontological resources, impacts to paleontological resources are considered to be potentially significant without mitigation.**

(b) Operational Impacts

The Project would have no impacts to paleontological resources during operation as there would be no continuous groundbreaking or excavation activities during Project operation with the potential to destroy or otherwise affect paleontological resources located below the ground surface.

(2) Mitigation Measures

The following mitigation measures address impacts to previously unknown paleontological resources:

PALEO-MM-1: Retention of a Qualified Paleontologist. A Qualified Paleontologist meeting the Society of Vertebrate Paleontology Standards (SVP, 2010) (Qualified Paleontologist) shall be retained prior to the approval of demolition or grading permits. The Qualified Paleontologist shall provide technical and compliance oversight of all work as it relates to paleontological resources, shall attend the Project kick-off meeting and Project progress meetings on a regular basis, and shall report to the Project Site in the event potential paleontological resources are encountered.

PALEO-MM-2: Construction Worker Paleontological Resources Sensitivity Training. The Qualified Paleontologist shall conduct construction worker paleontological resources sensitivity training at the Project kick-off meeting prior to the start of ground disturbing activities (including vegetation removal, pavement removal, etc.). In the event construction crews are phased, additional training shall be conducted for new construction personnel. The training session shall focus on the recognition of the types of paleontological resources that could be encountered

⁴³ McLeod, S., Re: Paleontological resources for the proposed Hilton Universal Project, in Universal City, Los Angeles County, project area. Letter response to Vanessa Ortiz, April 6, 2018.

within the Project Site and the procedures to be followed if they are found. Documentation shall be retained by the Qualified Paleontologist demonstrating that the appropriate construction personnel attended the training.

PALEO-MM-3: Paleontological Resources Monitoring. Paleontological resources monitoring shall be performed by a qualified paleontological monitor (meeting the standards of the SVP, 2010) under the direction of the Qualified Paleontologist. Paleontological resources monitoring shall be conducted for all ground disturbing activities in previously undisturbed sediments which have high sensitivity for encountering paleontological resources (Upper Topanga Formation, which encompasses the entire Project Site). However, depending on the conditions encountered, full-time monitoring can be reduced to part-time inspections or ceased entirely if determined adequate by the Qualified Paleontologist. The Qualified Paleontologist shall spot check the excavation on an intermittent basis and recommend whether the depth of required monitoring needs to be revised based on his/her observations. Monitors shall have the authority to temporarily halt or divert work away from exposed fossils or potential fossils. Monitors shall prepare daily logs detailing the types of activities and soils observed and any discoveries. Any significant fossils collected during Project-related excavations shall be prepared to the point of identification and curated into an accredited repository with retrievable storage. The Qualified Paleontologist shall prepare a final monitoring and mitigation report for submittal to the City in order to document the results of the monitoring effort and any discoveries. If there are significant discoveries, fossil locality information and final disposition shall be included with the final report, which shall be submitted to the appropriate repository and the City.

(3) Level of Significance After Mitigation

Mitigation Measures PALEO-MM-1 to PALEO-MM-3 would ensure short-term construction activities do not directly or indirectly destroy a unique paleontological resource or site. With implementation of Mitigation Measures PALEO-MM-1 to PALEO-MM-3, potentially significant impacts to paleontological resources would be reduced to a less-than-significant level.

e) Cumulative Impacts

(1) Impact Analysis

Due to the site-specific nature of geological conditions (i.e., soils, geological features, subsurface features, seismic features, etc.), geology impacts are typically assessed on a project-by-project basis rather than on a cumulative basis. Nonetheless, forecast growth through 2026 (buildout year), inclusive of the fifteen (15) related projects identified in Chapter III, *Environmental Setting*, of this Draft EIR, could potentially result in cumulative impacts involving geology and soils constraints and disturbance of or damage to paleontological resources. However, as with the Project, related projects would be subject to established guidelines and regulations pertaining to building design and seismic safety,

including those set forth in the CBC and the Los Angeles Building Code. **Therefore, considering the proposed land uses of the Project, as well as the existing regulatory requirements and regulations that would apply to all development, the Project's contribution to cumulative impacts would not be cumulatively considerable, and cumulative impacts regarding geology and soils would be less than significant.**

With regard to paleontological resources, related projects within the cumulative study area for the Project include construction excavation on parcels that have been disturbed or are already developed, as well as on open space parcels, and would have the potential to disturb geological units that are sensitive for paleontological resources. If the potential for significant impacts on paleontological resources were identified given the site characteristics and development program of the related projects, the City's standard condition of approval to address inadvertent discovery of paleontological resources and/or site specific mitigation measures on site with a high paleontological sensitivity would be required. Implementation of these standard conditions of approval and/or mitigation measures would reduce the potential for adverse effects on paleontological resources individually and cumulatively, and would preserve and maximize the potential of these resources to contribute to the body of scientific knowledge. **Therefore, the Project's contribution to cumulative impacts would not be cumulatively considerable. As such, cumulative impacts on paleontological resources would be less than significant.**

(2) Mitigation Measures

Cumulative impacts regarding geologic hazards, erosion of soils, other geological issues resources were determined to be less than significant. Therefore, no mitigation measures are required for these geology and soils issues. Cumulative impacts related to paleontological resources would be less than significant with implementation of Mitigation Measures PALEO-MM-1 to PALEO-MM-3. No additional mitigation measures to address cumulative impacts are required.

(3) Level of Significance After Mitigation

With compliance with the State and City Building Code regulations, where applicable, Project-level and cumulative impacts related to geologic hazards, erosion of soils, and other geological issues would be less than significant. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

Cumulative impacts related to paleontological resources would be less than significant with implementation of Mitigation Measures PALEO-MM-1 to PALEO-MM-3.

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