# IV. Environmental Impact Analysis

# C. Geology and Soils

## 1. Introduction

This section evaluates potential existing 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 in the *Geotechnical Engineering Investigation, Proposed Mixed-Use Development, 1100 East 5th Street, Los Angeles, California*[1] (Geotechnical Report), which is provided as **Appendix D.1** of this Draft EIR. This preliminary Geotechnical Report was approved by the Los Angeles Department of Building and Safety on March 22, 2019.[2] 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 the *1100 E. 5th Street Project Paleontological Resources Assessment Report*[3] (Paleontological Assessment), which is included as **Appendix D.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. As described below, these plans, guidelines, and laws include the following:

- Earthquake Hazards Reduction Act
- National Pollutant Discharge Elimination System (NPDES)
- Paleontological Resources Preservation Act
- Society for Vertebrate Paleontology Standard Guidelines
- Alquist-Priolo Earthquake Act
- Seismic Hazards Mapping Act
- California Building Code

1 Geotechnologies, Inc., Geotechnical Engineering Investigation, Proposed Mixed-Use Development for APNs 5163-024-009 and 5163-024-014, 1100 East 5th Street, Los Angeles, California, 90013, September 14, 2017.

2 City of Los Angeles, Department of Building and Safety, Grading Division, Soils Report Approval Letter, LOG# 107421, March 22, 2019. This letter is included as **Appendix D.1**.

3 ESA, 1100 E. 5th Street Project Paleontological Resources Assessment Report for APNs 5163-024-009 and 5163-024-014, 1100 East 5th Street, Los Angeles, California, 99013, April 2020.

- California Division of Oil, Gas, and Geothermal Resources (CalGEM)
- California Penal Code Section 622.5
- 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.[4]

#### *(c) Society for Vertebrate Paleontology Standard Guidelines*

The Society for Vertebrate Paleontology (SVP) has established standard guidelines[5] that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen

[4] Environmental Protection Agency, Clean Water Act Section 402 Website, available at: https://www.epa.gov/cwa-404/clean-water-act-section-402-national-pollutant-discharge-elimination-system, accessed August 23, 2022.

[5] Society of Vertebrate Paleontology, Standard procedures for the assessment and mitigation of adverse impacts to paleontological resources, 2010, website: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf, accessed August 23, 2022.

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[6], 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,[7] significant fossiliferous deposits are:

> *A rock unit or formation which contains significant nonrenewable palaeontologic 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). Palaeontologic 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,[8] 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 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.

6 Society of Vertebrate Paleontology, Assessment and mitigation of adverse impacts to nonrenewable palaeontologic resources: standard guidelines, Society of Vertebrate Paleontology News Bulletin 163:22-27, 1995.

7 Society of Vertebrate Paleontology, Assessment and Mitigation of Adverse Impacts to Nonrenewable Palaeontologic 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 Palaeontologic Resources: Standard Guidelines, Society of Vertebrate Paleontology News Bulletin 163:22-27, 1995.

## (2) State of California

### *(a) Alquist-Priolo Earthquake Fault Zoning 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 (PRC) as Division 2, Chapter 7.5 to address hazards from earthquake fault zones. The purpose of this law is to mitigate the hazard of surface fault rupture by regulating development near active faults. As required by the Act, the state has delineated Earthquake Fault Zones (formerly Special Studies Zones) along known active faults in California, which vary in width around the fault trace from about 200 to 500 feet on either side of the fault trace. Cities and counties affected by the zones must regulate certain development projects within the zones. The State Geologist is also required to issue appropriate maps to assist cities and counties in planning, zoning, and building regulation functions. Local agencies enforce the Act in the development permit process, where applicable, and may be more restrictive than state law requires. According to Act, before a project that is within an Alquist-Priolo Earthquake Fault Zone can be permitted, cities and counties shall require a geologic investigation, prepared by a licensed geologist, to demonstrate that buildings will not be constructed across active faults. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back a distance to be established by a California Certified Engineering Geologist. Although setback distances may vary, a minimum 50-foot setback is typically required.

### *(b) Seismic Hazards Mapping Act*

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

### *(c) California Building Code*

The California Building Code (CBC), which is codified in Title 24 of the California Code of Regulations, Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, means of egress facilities, and general stability of buildings. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State

law, all building standards must be centralized in Title 24 or those standards are not enforceable. The provisions of the CBC apply to the construction, alteration, movement, replacement, location, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The 2019 edition of the CBC is based on the 2018 International Building Code (IBC) published by the International Code Council. The code is updated triennially, and the 2019 edition of the CBC was published by the California Building Standards Commission on July 1, 2019, and became effective 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.[9]

#### *(d) California Penal Code Section 622.5*

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

#### *(e) California PRC Section 5097.5*

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

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

### (3) Local

#### *(a) City of Los Angeles General Plan*

##### *(i) Safety Element*

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

[9] California Building Standards Commission, California Building Codes Website, available at: https://www.dgs.ca.gov/BSC/Codes#@ViewBag.JumpTo/, accessed August 23, 2022.

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.

### *(iii) 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 Preliminary Geotechnical Report prepared for the Project, which is included in **Appendix D.1** of this Draft EIR. The information provided below is from this report unless otherwise cited.

## (1) Geologic Setting

The Project Site is located in the Los Angeles Basin, which is bordered to the east and southeast by the Santa Ana Mountains and San Joaquin Hills, to the northwest by the Santa Monica Mountains, and the west by the Pacific Ocean. Over 22 million years ago, the Los Angeles Basin was a deep marine basin. Over five miles of marine and non-marine sedimentary rock as well as intrusive and extrusive igneous rocks have filled the basin. During the last two million years, defined by the Pleistocene and Holocene epochs, the Los Angeles Basin and surrounding mountain ranges have been uplifted to form the present-day landscape. Erosion of the surrounding mountains has resulted in deposition of unconsolidated sediments in low-lying areas by rivers, such as the Los Angeles River.

The Project Site is located in the Arts District of Downtown Los Angeles. The topography of the Project Site and surrounding area is relatively flat with elevations ranging from 257.7 feet above mean sea level at the southeast corner to 254.5 feet at the south corner. Located approximately 0.4-mile from the Los Angeles River, the Project Site is underlain by a thick accumulation of recent alluvium and old alluvium that extends to a depth of approximately 130 feet below the ground surface. The alluvium is underlain by siltstone bedrock of the Fernando Formation. The bedrock is relatively impermeable and forms a barrier to vertical migration of groundwater.

## (2) Subsurface Geology and at the Project Site

As discussed in greater detail in the Geotechnical Report provided in **Appendix D.1** of this Draft EIR,[10] exploration of the Project Site was conducted on July 19, 2017, by drilling two exploratory borings to a depth of 50.5 feet below the existing Site grade. Deeper drilling was not possible due to the very dense consistency and increasing grain size with depth.

The ground surface is paved with concrete that ranges between four and five inches thick. Fill soil was encountered in all the exploratory borings to a depth of three feet. Fill soil underlying the Project Site consists of silty sand, which is yellowish brown and dark brown, moist, and fine-grained. Underlying the fill is natural alluvium consisting of poorly- to well-graded sand, and silty sand, which is yellowish brown, grayish brown, and dark brown in color, moist to very moist, medium dense to very dense. The alluvium appears to coarsen with depth with increasing frequency and size and of gravel below a depth of 20 feet. Although not identified in the borings, siltstone bedrock of the Fernando Formation underlies the alluvium near a depth of 130 feet below the ground surface.

[10] See pages 3-5 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.

### (3) Groundwater

Groundwater was not encountered in the borings to a maximum depth of 50.5 feet below ground surface. The historically highest groundwater level is on the order of 100 feet below the existing ground surface.[11] Fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors not evident at the time of the measurements. Fluctuations also may occur across the Project Site. High groundwater levels can result in changed conditions.

### (4) Faulting and Seismicity

Based on criteria established by the CGS, faults may be categorized as active, potentially active, or inactive. Active faults are those that show evidence of surface displacement within the last 11,000 years (Holocene age). Potentially active faults are those that show evidence of most recent surface displacement within the last 1.6 million years (Quaternary age). Faults showing no evidence of surface displacement within the last 1.6 million years are considered inactive for most purposes, with the exception of design of some critical structures.

The Alquist-Priolo Act was enacted to address the hazards and damage caused by surface fault rupture during an earthquake. Surface rupture is defined as surface displacement that occurs along the surface trace of the causative fault during an earthquake. The City has also established Preliminary Fault Rupture Study Areas, which are areas where active faults may exist and present a potential for surface ground rupture to occur during a local earthquake. These are intended to act as temporary Alquist-Priolo Earthquake Fault Zones until the State of California Geological Survey establishes more accurate Earthquake Fault Zones based, in part, on the geologic investigations produced by City of Los Angeles.

Buried thrust faults are faults without a surface expression but are a significant source of seismic activity. They are typically broadly defined based on the analysis of seismic wave recordings of hundreds of small and large earthquakes in the Southern California area. Due to the buried nature of these thrust faults, their existence is usually not known until they produce an earthquake. The risk for surface rupture potential of these buried thrust faults is low, however, the seismic risk of these buried thrust faults is not well established. Therefore, the potential for surface rupture from these faults cannot be precluded.

The Project Site is not located within a designated Alquist-Priolo Earthquake Fault Zone; the nearest Alquist-Priolo Earthquake Fault Zone is along the Hollywood and Raymond Faults, approximately 5 miles north of the Project Site.[12] Additionally, the Project Site is not within a Preliminary Fault Rupture Study Area.[13] Furthermore, the nearest active fault without a known

[11] See pages 4-5 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.
[12] California Department of Conservation, California Geological Survey, Earthquake Zones of Required Investigation, EQ Zapp Interactive Map, available at: https://maps.conservation.ca.gov/cgs/EQZApp/app/, accessed August 23, 2022.
[13] California Department of Conservation, California Geological Survey, Earthquake Zones of Required Investigation, EQ Zapp Interactive Map, available at: https://maps.conservation.ca.gov/cgs/EQZApp/app/, accessed August 23, 2022.

surface trace is the Puente Hills Blind Thrust, approximately 1-mile from the Project Site,[14] and thus, well over the 50-foot range within a fault where rupture generally occurs. Based on these considerations, the potential for surface ground rupture at the Project Site is considered low.[15] The primary geological hazard at the Project Site is moderate to strong ground motion caused by an earthquake on any of the local or regional faults.[16]

### (5) Seismically-Induced Settlement

Seismically-induced settlement or compaction of dry or moist, cohesionless soils can be an effect related to earthquake ground motion. Such settlements are typically most damaging when the settlements are differential in nature across the length of structures. Due to the dense consistency of the underlying geologic materials, excessive differential settlements are not expected to occur.[17]

### (6) Slope Stability/Landslides

The topography of the Project Site and surrounding area is relatively flat with elevations ranging from 257.7 feet above mean sea level at the southeast corner to 254.5 feet at the south corner, for a total elevation difference of 2.2 feet. The ground surface slopes gently to the west at a 100 to 1 gradient (horizontal to vertical).

A landslide area, as identified by the State of California, is an area with the potential for earthquake-induced rock falls, slope failure, and debris flow. Due to the lack of slope across the Project site, the probability of a seismically-induced landslide is considered to be low.[18] Furthermore, the Project Site is not located in a Landslide or Hillside Area[19] and has been identified as having a low susceptibility to landslide.[20]

### (7) Liquefaction and Lateral Spreading

Liquefaction is the phenomenon in which saturated, silty to cohesionless soils below the groundwater table temporarily lose strength during strong ground shaking as a consequence of increased pore pressure during conditions such as those caused by earthquakes. The vast majority of liquefaction hazards are associated with sandy soils and silty soils of low plasticity. Potentially liquefiable soils must be saturated or nearly saturated to be susceptible to liquefaction. Liquefaction potential decreases with increasing grain size and clay and gravel content, but

[14] City of Los Angeles Department of City Planning, Zone Information & Map Access System, website: http://zimas.lacity.org, accessed: August 23, 2022.
[15] See page 7 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.
[16] See page 6 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.
[17] See page 8 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.
[18] See page 8 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.
[19] City of Los Angeles Department of City Planning, Zone Information & Map Access System, website: http://zimas.lacity.org, accessed: August 23, 2022.
[20] City of Los Angeles, Emergency Management Department, 2018 Local Hazard Mitigation Plan, Figure 11-7: Landslide Hazard Areas in the East Los Angeles APC, website: https://emergency.lacity.org/sites/g/files/wph1791/files/2021-10/2018_LA_HMP_Final_with_maps_2018-02-09.pdf, accessed: August 23, 2022.

increases as the ground acceleration and duration of shaking increase. Structures founded on or above potentially liquefiable soils may experience bearing capacity failures due to the temporary loss of foundation support, vertical settlements (both total and differential), and undergo lateral spreading.

According to the California Geological Survey, the Project Site is not located within a potentially liquefiable area.[21] This determination is based on groundwater depth records, soil type, and distance to a fault capable of producing a substantial earthquake. In addition, the Project Site is not listed within a liquefaction area in ZIMAS.[22]

As shown in **Figure II-19** in **Section II, Project Description**, of this Draft EIR, the lowest finished floor elevation would be approximately 42 feet below the existing grade. Excavation to a depth of up to 50 feet below ground surface would be required. Groundwater was not encountered during exploration to a depth of 50.5 feet below the ground surface. As also discussed in the Geotechnical Report, the historic high groundwater level for the Project Site was 100 feet below the ground surface. Therefore, according to the Geotechnical Report, based on the dense consistency of the underlying soils and depth to historic highest groundwater level, the potential for liquefaction occurring at the Project Site is considered to be remote.[23] Given the above, and that there are no slopes located on or adjacent to the Project Site, the potential for lateral spreading to occur at the Project Site would also be low.

### (8) Expansive Soils

Expansion and contraction of volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes markedly, and can cause structural damage to buildings and infrastructure. To find the expansiveness of the soil, an expansion test was performed during the undertaking of the Geotechnical Report. According to the Geotechnical Report, based upon the expansion testing conducted, the on-site soils are in the very low expansion range.[24]

### (9) Paleontological Resources

As part of the Paleontological Assessment, the Natural History Museum of Los Angeles County (LACM) conducted a records search for paleontological resources within the vicinity of the Project Site. The search, the results of which are provided in **Appendix D.2** of this Draft EIR, included a review of paleontology collection records for previously recorded fossil localities. There are no recorded fossil localities on the Project Site, however, subsurface deposits throughout the entire Project area consist of surficial younger alluvium on top of older Quaternary Alluvium, which has yielded fossils of numerous Ice Age animals in the Los Angeles area. The closest fossil locality

[21] California Department of Conservation, California Geological Survey, Earthquake Zones of Required Investigation, EQ Zapp Interactive Map, available at: https://maps.conservation.ca.gov/cgs/EQZApp/app/, accessed August 23, 2022.
[22] City of Los Angeles Department of City Planning, Zone Information & Map Access System Website, available at: http://zimas.lacity.org, accessed: August 23, 2022.
[23] See page 7 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.
[24] See page 11 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.

known to the LACM is approximately 1.3-miles west of the Project Site at the intersection of Hill Street and 12th Street, where a fossil horse (*Equus*) was recovered from 43 feet below the surface. Approximately 1.9 miles northeast of the Project Site near the intersection of Mission Road and Daly Street around the Golden State Freeway (I-5), fossil specimens of pond turtle, (*Clemmys mamorata*), ground sloth (*Paramylodon harlani*), mastodon (*Mammut americanum*), mammoth (*Mammuthus imperator*), horse (*Equus*), and camel (*Camelops*) were recovered from a depth of 20-35 feet below the surface. Just north of this locality, two miles northeast of the Project Site, near the intersection of Workman Street and Alhambra Avenue, excavations for a storm drain recovered fossil specimens of turkey (*Meleagris californicus*), sabre-toothed cat (*Smilodon fatalis*), horse (*Equus*), and deer (*Odocoileus*) at an unstated depth. Based on the review of scientific literature and geologic mapping, as well as the records search from the LACM, the Paleontological Assessment assigned a low to high paleontological sensitivity (increasing with depth) for the surficial younger alluvium beneath the Project Site and a high paleontological sensitivity for older Quaternary Alluvium.[25]

# 3. Project Impacts

## a) Thresholds of Significance

In accordance with Appendix G of the *State CEQA Guidelines*, the Project would have a significant impact related to geology and soils and paleontological resources if it results in any of the following impacts to future residents or users:

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

- ***i. rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42;***
- ***ii. Strong seismic ground shaking;***
- ***iii. Seismic-related ground failure, including liquefaction;***
- ***iv. Landslides.***

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

***Threshold (c):*** ***Be located on a geologic unit 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.***

[25] ESA, 1100 E. 5th Street Project Paleontological Resources Assessment Report for APNs 5163-024-009 and 5163-024-014, 1100 East 5th Street, Los Angeles, California, 99013, April 2020, pages 14-15. (**Appendix D.2** of this Draft EIR).

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

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

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

For this analysis, the Appendix G Thresholds listed above 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 *L.A. CEQA Thresholds Guide* identifies the following criteria to evaluate geology and soils impacts:

### (1) Geological Hazards

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

### (2) 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.

### (3) 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.

### (4) Paleontological Resources

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

The potential for the Project to result in impacts related to geology and soils and paleontological resources is based on the *State CEQA Guidelines* Appendix G thresholds and criteria identified in the *L.A. CEQA Thresholds Guide* that provide supplemental analysis to the Appendix G

thresholds, where applicable. The City's threshold criteria above are considerations that were part of this analysis of the Appendix G thresholds for geology and soils.

# b) Methodology

## (1) Geology and Soils

To evaluate potential hazards relative to geology and soils, a Geotechnical Report was prepared by Geotechnologies, Inc. (included as **Appendix D.1** to this Draft EIR). The investigation included field exploration (i.e., exploratory soil borings) and laboratory testing to determine the characteristics of the subsurface conditions at the Project Site. In addition, relevant literature and materials were reviewed. As noted, the Geotechnical Report was reviewed and approved by LADBS on March 22, 2019.[26]

The purpose of the Geotechnical Report was to identify the distribution and engineering properties of the geologic materials underlying the Project Site, and to provide geotechnical recommendations for the design of the proposed development. The Geotechnical Report included drilling of two borings, collection of representative samples, laboratory testing, engineering analysis, review of published geologic data, and review of available geotechnical engineering information.

The Project would be regulated by the various laws, regulations, and policies summarized in the Regulatory Framework. Compliance by the Project with applicable federal, state, and local laws and regulations is assumed in this analysis, and local and state agencies would be expected to continue to enforce applicable requirements to the extent that they do so now. Note that compliance with many of the regulations is a condition of permit approval.

## (2) Paleontological Resources

### *(a) SVP Survey Guidelines*

The Society for Vertebrate Paleontology (SVP) has established standard guidelines that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most state regulatory agencies with paleontological resource-specific Laws, Ordinances, Regulations, and Standards (LORS) accept and use the professional standards set forth by the SVP.

[26] City of Los Angeles, Board of Building and Safety Commissioners, Department of Building and Safety, Soils Report Approval Letter from Dan Ryan Evangelista, Structural Engineering Associate II, March 22, 2019.

As defined by the SVP, significant nonrenewable paleontological resources are:

> *Fossils and fossiliferous deposits here 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, 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 above-cited significance definitions of the SVP, 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 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.

Fossils are contained within surficial sediments or bedrock and are therefore not observable or detectable unless exposed by erosion or human activity. A geologic unit known to contain significant fossils is considered to be "sensitive" to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either directly or indirectly disturb or destroy fossil remains. Paleontological sites indicate that the containing sedimentary rock unit or formation is fossiliferous. The limits of the entire rock formation, both areal and stratigraphic, therefore define the scope of the paleontological potential in each case.

### *(b) Paleontological Sensitivity*

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 SVP[27] defines four categories of 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. Rocks units classified as having high potential for producing paleontological resources include, but are not limited to, (1) sedimentary formations and some volcaniclastic formations (e. g., ashes or tephras [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

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

units with no potential to yield fossils require no protections; no impacts are anticipated on such units and no mitigation is not 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 palaeontologic potential of the rock units present in the study area, which in turn prescribes how mitigation measures should be assigned.

### *(c) Project Impact Evaluation*

To evaluate potential impacts to paleontological resources, ESA conducted a Paleontological Resources Assessment for the Project that included a paleontological records search from the Natural History Museum of Los Angeles County (LACM), as well as geologic map and literature reviews. The review of the scientific literature and geologic mapping, as well as the records search from the LACM, was used to assign paleontological sensitivities following the guidelines of the SVP to the geologic units that are present at the surface or in the subsurface of the Project Site that would be impacted by ground-disturbing activities associated with the Project. The data provided in ESA's report was used to inform the environmental setting at the Project Site for paleontological resources as well as the probability of potential impacts to the paleontological resources from implementation of the Project. ESA's findings, in addition to the thresholds of significance enumerated below, formed the basis of the impact determination. The report is attached as **Appendix D.2** of this Draft EIR.

## c) Project Design Features

Construction and operation of the Project would be implemented in accordance with applicable regulatory and code requirements related to geology and soils, including paleontological resources. No specific Project Design Features are proposed with regard to geology and soils or paleontological resources.

## d) Analysis of Project Impacts

As compared to the Project, the Flexibility Option would change a portion of the use of the second floor from residential to commercial, and would not otherwise change the Project's land uses or size. The overall commercial square footage provided would be increased by 17,765 square feet to 64,313 square feet and, in turn, there would be a reduction in the number of live/work units from 220 to 200 units. The overall building parameters would remain unchanged, and the design, configuration, and operation of the Flexibility Option would be comparable to the Project. Furthermore, with regard to site-specific geologic hazards, such as seismic ground shaking, the Flexibility Option would be located on the same Project Site with the same subsurface materials as the Project, would excavate to the same depth as the Project, and, same as with Project, would be required to comply with all applicable provisions of the Los Angeles Building

Code, the recommendations of the Geotechnical Report (see **Appendix D.1** of this Draft EIR), and conditions of approval from LADBS Grading Division. Therefore, the conclusions regarding the impact analysis and impact significance determination presented below for the Project would be the same under the Flexibility Option. However, as discussed below, for certain thresholds, the impacts of the Project were addressed in the Initial Study (see **Appendix A.2** of this Draft EIR) and were determined to be less than significant, with no further analysis required. Accordingly, since the Flexibility Option was not specifically addressed in the Initial Study, the analysis of the Flexibility Option is presented in this section for those thresholds.

***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;***

***ii. Strong seismic ground shaking;***

***iii. Seismic-related ground failure, including liquefaction;***

***iv. Landslides?***

## (1) Impact Analysis

### *(a) Fault Rupture*

#### *(i) Project*

As discussed in the Initial Study (**Appendix A.2** of this Draft EIR), the Project would not directly or indirectly exacerbate existing environmental conditions from ground rupture from known earthquake faults for all the reasons detailed below for the Flexibility Option. Therefore, the Project would have a less-than-significant impact with respect to risk of loss, injury, or death involving rupture from a known earthquake fault, and no mitigation measures are necessary.

#### *(ii) Flexibility Option*

The Flexibility Option would change the use of the second floor from residential to commercial, and would not otherwise change the Project's mix of land uses or size. Overall, the design, configuration, and operation of the Flexibility Option would be comparable to the Project.

As detailed in the existing setting above, based on research of available literature and results of the site reconnaissance, no known active or potentially active faults underlie the Project Site. The Project Site is not located within an Alquist-Priolo Earthquake Fault Zone or a Preliminary Fault Rupture Study Area and the nearest fault with no known surface trace, the Puente Hills Blind Thrust Fault, is located approximately 1-mile away, outside of the 50-foot range where surface rupture would generally occur. Therefore, the potential for future surface rupture on the Project

Site is very low. Furthermore, the City of Los Angeles Building Code, with which the Project would be required to comply, contains construction requirements to ensure habitable structures are built to a level such that they can withstand acceptable seismic risk. Similar to the Project, the Flexibility Option would not directly or indirectly exacerbate existing environmental conditions from ground rupture from known earthquake faults. Therefore, the Flexibility Option would have a less-than-significant impact with respect to risk of loss, injury, or death involving rupture from a known earthquake fault, and no mitigation measures are necessary.

### *(b) Strong Seismic Ground Shaking*

Because the Flexibility Option would be located on the same Project Site as the Project and would be subject to the same site conditions and regulatory requirements, the conclusions regarding the impact analysis and impact significance determination presented below for the Project would be the same under the Flexibility Option.

In light of the California Supreme Court ruling in *California Building Industry Assn. v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (*CBIA v. BAAQMD)*, which held that CEQA generally does not require a lead agency to consider the impacts of the existing environment on the future residents or users of a project, the potential for substantial adverse effects on people or structures from strong seismic ground shaking from earthquakes is not an impact under CEQA. The type of development expected to occur under the Project is typical of urban environments and would not involve mining operations, deep excavation into the earth, or boring of large areas creating unstable seismic conditions or stresses in the earth's crust. Furthermore, there are no active or potentially active faults that traverse the Project Site. Based on the above, development of the Project would not directly or indirectly exacerbate seismic conditions on the Project Site or in the area, therefore, impacts related to strong seismic ground shaking would be less than significant.

Nonetheless, a review of the geologic conditions at the Project Site indicates that the Project Site is within the seismically active Southern California region. Therefore, the Project Site is susceptible to ground shaking during a seismic event, and it is likely the Project would be affected by future earthquakes. Strong seismic ground shaking could damage the proposed buildings, parking areas, and utility infrastructure, potentially exposing people to related risks of injury or death. However, Project construction would be consistent with all applicable provisions of the Los Angeles Building Code, the recommendations of the Geotechnical Report (see **Appendix D.1** of this Draft EIR), and conditions of approval from LADBS Grading Division. Conformance with current Los Angeles Building Code requirements would minimize the potential for structures on the Project Site to sustain substantial damage during an earthquake. Specifically, the Project would be required to conform to the current seismic design provisions of the City's Building Code, which incorporates the latest seismic design standards for structural loads and materials to accommodate maximum ground accelerations expected from known faults in the vicinity of the Project Site. These building codes require that modern buildings are designed to resist ground shaking through the use of shear panels, moment frames, and reinforcement. The potential seismic hazard to the Project Site would not be higher than in most areas of the City or elsewhere in the region.

Therefore, under the Project and the Flexibility Option, impacts would be less than significant with respect to risk of loss, injury, or death involving strong seismic ground shaking, and no mitigation measures are necessary.

### *(c) Seismic-Related Ground Failure Including Liquefaction*

Because the Flexibility Option would be located on the same Project Site as the Project and would be subject to the same site conditions and regulatory requirements, the conclusions regarding the impact analysis and impact significance determination presented below for the Project would be the same under the Flexibility Option.

As previously discussed, seismic hazard maps prepared by the CGS show that the Project Site is not located within a potentially liquefiable area.[28] This determination by the CGS is based on groundwater depth records, soil type, and distance to a fault capable of producing a substantial earthquake. Additionally, ZIMAS indicates that the Project Site is not located in an area that has been identified by the state as being potentially susceptible to liquefaction.[29] Typically, liquefaction occurs in shallow groundwater areas where there are loose, cohesionless, fine-grained soils. Construction of the Project would require excavation to a depth of approximately 50 feet below ground surface. According to the Geotechnical Report, historical high groundwater at the Project Site is reported to be 100 feet in depth below ground surface and groundwater was not encountered in onsite borings advanced up to a depth of 50.5 feet below ground surface during the subsurface investigation performed as part of the Geotechnical Report. Furthermore, the subsurface materials were determined to be medium dense to very dense and no loose, cohesionless soils were encountered.[30] Based on these considerations, the Geotechnical Report concluded that the potential for liquefaction occurring at the Project Site is considered to be remote.[31]

The Project, nonetheless, would be required to comply with the current Los Angeles Building Code, which incorporates (with local amendments) the latest editions of the International Building Code and California Building Code. Compliance with the Los Angeles Building Code includes incorporation of seismic standards appropriate to the Project Site and its seismic design category, which takes into consideration seismic-related ground failure. Additionally, the Project would be required to comply with the design recommendations enumerated in the Geotechnical Report, which includes seismic design considerations, and the conditions of approval from LADBS Grading Division. Thus, the required compliance with the Los Angeles Building Code and the Geotechnical Report would ensure the proposed development is built to a level such that it can withstand acceptable seismic risk.

---

[28] California Department of Conservation, California Geological Survey, Earthquake Zones of Required Investigation Map, EQ Zapp Interactive Map, available at: https://maps.conservation.ca.gov/cgs/EQZApp/app/, accessed August 23, 2022.

[29] City of Los Angeles Department of City Planning, Zone Information & Map Access System Website, available at: http://zimas.lacity.org, accessed: August 23, 2022.

[30] See page 4 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.

[31] See page 7 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.

Therefore, under the Project and the Flexibility Option, impacts would be less than significant with respect to seismic-related ground failure, including liquefaction, and no mitigation measures are necessary.

### *(d) Landslides*

#### *(i) Project*

As discussed in the Initial Study (**Appendix A.2** of this Draft EIR), the Project would not directly or indirectly exacerbate existing environmental conditions related to landslides because the Project Site and surrounding area consist of relatively flat topography, and are not in the path of any known or potential landslides. Therefore, no impact would occur under the Project with respect to risk of loss, injury, or death involving landslides, and no mitigation measures are necessary.

#### *(ii) Flexibility Option*

The Project Site is not located within an area identified by the City as having a potential for landslides, or of a known landslide.[32, 33] The Project Site and surrounding area consist of relatively flat topography. The Project Site is not in the path of any known or potential landslides.

The Flexibility Option would change the land use of the second floor from residential to commercial, and would not otherwise change the Project's land uses or size. Overall, the design, configuration, and operation of the Flexibility Option would be comparable to the Project. Similar to the Project, the Flexibility Option would not directly or indirectly exacerbate existing environmental conditions related to landslides. Therefore, no impact would occur under the Flexibility Option with respect to risk of loss, injury, or death involving landslides, and no mitigation measures are necessary.

### *(e) Conclusion*

State and local code requirements ensure that buildings are designed and constructed in a manner that, although the buildings may sustain damage during a major earthquake, would reduce the risk that buildings would collapse. The Geotechnical Report contains a discussion of potential methods of construction and site-specific recommendations for the Project Site, that would be reviewed and approved by the LADBS and implemented before construction. In addition, the LADBS would review a final design-level geotechnical report prior to issuance of any grading, shoring, or building permit for the Project. Adherence to the recommendations of the approved Final Geotechnical Report, as required under Chapter IX LAMC Div. 18, Sec. 91.1803, would ensure seismic risks are adequately reduced through conformity with applicable building codes,

[32] City of Los Angeles Department of City Planning, Zone Information & Map Access System Website, available at: http://zimas.lacity.org, accessed: August 23, 2022.

[33] City of Los Angeles, Emergency Management Department, 2018 Local Hazard Mitigation Plan, Figure 11-7: Landslide Hazard Areas in the East Los Angeles APC, website: https://emergency.lacity.org/sites/g/files/wph1791/files/2021-10/2018_LA_HMP_Final_with_maps_2018-02-09.pdf, accessed: August 23, 2022.

in conjunction with other requirements specified in site-specific preliminary and final geotechnical reports, that are reviewed and approved by licensed engineers at the City before development of the Project. **Accordingly, the Project and the Flexibility Option would not cause, accelerate, or exacerbate seismic conditions or other geologic conditions on the Project Site or in its vicinity that would result in substantial damage to structures, infrastructure, or other properties or expose people to substantial risk or injury. As such, direct and indirect impacts related to surface ground rupture, strong seismic ground shaking, liquefaction, seismic-related ground failure and landslides would be less than significant. No mitigation measures are required.**

### (2) Mitigation Measures

Under both the Project and the Flexibility Option, impacts related to the loss, injury, or death involving surface fault rupture, strong seismic ground shaking, seismic-related ground failure including liquefaction, and landslides would be less than significant; no mitigation would be required.

### (3) Level of Significance after Mitigation

Under both the Project and the Flexibility Option, impacts related to the loss, injury, or death involving surface fault rupture, strong seismic ground shaking, seismic-related ground failure including liquefaction, and landslides would be less than significant without mitigation.

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

### (1) Impact Analysis

#### *(a) Project*

As discussed in the Initial Study (**Appendix A.2** of this Draft EIR), due to the temporary nature of the soil exposure during the grading and excavation processes, substantial erosion is unlikely to occur. Furthermore, during this period, the Project would be required to prevent the transport of sediments from the Project Site by stormwater runoff and winds through the use of appropriate Best Management Practices (BMPs). Regional Water Quality Control Board regulations pertaining to surface water runoff and water quality (which would require BMPs) for construction projects would prevent significant impacts related to erosion and other geological impacts.

Operation of the Project would not have any impact with regard to soil erosion or loss of topsoil as the entire Project Site would be developed and there is no native topsoil at this previously disturbed and developed Project Site. **Therefore, impacts under the Project would be less than significant with respect to substantial soil erosion or the loss of topsoil, and no mitigation measures are necessary.**

#### *(b) Flexibility Option*

Construction and operation of the Flexibility Option would be similar to that of the Project; only the proposed size of the commercial portion of the Project would change. Similar to the Project,

due to the temporary nature of the soil exposure during the grading and excavation processes, substantial erosion is unlikely to occur. Furthermore, during this period, the Flexibility Option would be required to prevent the transport of sediments from the Project Site by stormwater runoff and winds through the use of appropriate BMPs as discussed above. Regional Water Quality Control Board regulations pertaining to surface water runoff and water quality (which would require BMPs) for construction projects would prevent significant impacts related to erosion and other geological impacts.

Operation of the Flexibility Option would not have any impact with regard to soil erosion or loss of topsoil as the entire Project Site would be developed and there is no native topsoil at this previously disturbed and developed Project Site. **Therefore, impacts under the Flexibility Option would be less than significant with respect to substantial soil erosion or the loss of topsoil, and no mitigation measures are necessary.**

### (2) Mitigation Measures

Under both the Project and the Flexibility Option, impacts related to soil erosion and loss of topsoil would be less than significant; no mitigation measures would be required.

### (3) Level of Significance after Mitigation

Under both the Project and the Flexibility Option, impacts related to soil erosion and loss of topsoil would be less than significant without mitigation.

***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 landside, lateral spreading, subsidence, liquefaction, or collapse?***

Because the Flexibility Option would be located on the same Project Site as the Project and would be subject to the same site conditions and regulatory requirements, the conclusions regarding the impact analysis and impact significance determination presented below for the Project would be the same under the Flexibility Option.

### (1) Impact Analysis

#### *(a) Landslides*

As discussed above, in the Initial Study (**Appendix A.2** of this Draft EIR), the Project Site is not located within an area identified as having potential for landslides. The Project Site is in a developed area of the City and there are no known nearby landslides, nor is the Project Site in the path of any known or potential landslides. Therefore, the Project would not exacerbate existing environmental conditions related to landslides.

### *(b) Lateral Spreading*

Lateral spreading or flow are terms referring to landslides that commonly form on gentle slopes and that have rapid fluid-like flow movement like water. Moreover, when liquefiable soils are present near a slope, lateral spreading can occur due to lack of lateral support. Since the Project Site is relatively flat and not located in an area identified as having potential for landslides nor within an area susceptible to liquefaction (see analysis presented above under **Threshold a(iii)**), the likelihood of lateral spreading would be very low. Therefore, the Project would not exacerbate existing environmental conditions related to lateral spreading.

### *(c) Subsidence*

Land subsidence is a gradual settling or sudden sinking of the Earth's surface owing to subsurface movement off earth materials. Land subsidence is typically caused by compression of soft, geologically young sediments or activities related to fluid extraction (e.g., groundwater, petroleum, or natural gas). As described in the existing setting above, subsurface exploration at the Project Site determined that the Site is underlain primarily by medium dense to very dense alluvial sands. Boring logs did not indicate the presence of soft, compressible sediment that would be susceptible to subsidence.[34] Additionally, the Project Site is not located in an area of known land subsidence.[35] No extraction activities occur at the Project Site, such as extraction of groundwater or petroleum, which would contribute toward a susceptibility for subsidence, and no extraction activities, such as extraction of groundwater or petroleum, are proposed by the Project. Thus, subsidence as a result of such activities would not occur. As such, earth materials underlying the Project Site would not be subject to subsidence. Therefore, the Project would not exacerbate existing environmental conditions related to subsidence.

### *(d) Liquefaction*

As detailed above in the analysis under **Threshold a(iii),** based on groundwater depth records, soil type, and distance to a fault capable of producing a substantial earthquake, the subsurface materials at the Project Site would not be susceptible to liquefaction. Additionally, the Project would be required to implement the Site- and Project-specific recommendations contained in the Geotechnical Report and to comply with the Los Angeles Building Code including incorporation of seismic standards appropriate to the Project Site and its seismic design category, which takes into consideration seismic-related ground failure. Therefore, the Project would not exacerbate existing environmental conditions related to liquefaction.

### *(e) Seismic-Induced Settlement or Collapse*

Seismically-induced settlement or compaction of dry or moist, cohesionless soils can result from earthquake ground motion. Such settlements are typically most damaging when the settlements are differential in nature across the length of structures. Some seismically-induced settlement of

[34] See boring logs in the Geotechnical Report in **Appendix D.1** of this Draft EIR.

[35] United States Department of the Interior, United States Geological Survey, Areas of Land Subsidence in California Online Map, available at: https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html, accessed August 23, 2022.

structures within the Project Site are expected as a result of strong ground shaking. As previously discussed above under **Threshold a(iii)**, seismic settlement is not anticipated due to the dense consistency of the natural alluvium at the Project Site. Therefore, the Project would not exacerbate existing environmental conditions related to seismic-induced settlement or collapse.

*(f) Conclusion*

All required excavations would be sloped, or properly shored, in accordance with the provisions of the California Building Code and additional Los Angeles Building Code requirements, as applicable, as well as the Site- and Project-Specific recommendations contained in the Geotechnical Report. The Project would also be required to comply with the permitting requirements of LADBS. Pursuant to LAMC Section 91.7006, the Project would be required to provide a final design-level geotechnical report, subject to LADBS review and approval prior to the issuance of grading permits for the Project. The final design-level geotechnical report would include the primary recommendations of the Geotechnical Report, included as **Appendix D.1** of this Draft EIR, and the final design-level recommendations from that report would be incorporated in the Project and enforced by LADBS.

In accordance with the recommendations of the Geotechnical Report and the preparation and approval of a final geotechnical report, the Project would not cause or accelerate geologic hazards related to soils that would become unstable as a result of the Project and potentially result in on- or off-Site landslides, lateral spreading, subsidence, liquefaction, or collapse. **Therefore, no impacts with respect to unstable soils would occur under the Project and Flexibility Option, and no mitigation measures are necessary.**

## (2) Mitigation Measures

Under both the Project and the Flexibility Option, impacts related to geologic unit or soil instability resulting in landslide, lateral spreading, subsidence, liquefaction, or collapse would be less than significant; no mitigation measures would be required.

## (3) Level of Significance after Mitigation

Under both the Project and the Flexibility Option, impacts related to geologic unit or soil instability resulting in landslide, lateral spreading, subsidence, liquefaction, or collapse would be less than significant without mitigation.

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

Because the Flexibility Option would be located on the same Project Site as the Project and would be subject to the same site conditions and regulatory requirements, the conclusions regarding the impact analysis and impact significance determination presented below for the Project would be the same under the Flexibility Option.

### (1) Impact Analysis

Expansion and contraction of volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes markedly, and can cause structural damage to buildings and infrastructure. To find the expansiveness of the soil, a swell test was performed during the undertaking of the Geotechnical Report. Based upon the testing, the on-Site soils exhibit a very low expansion range.[36] Nonetheless, construction of the Project would be required to comply with the California Building Code and Los Angeles Building Code, which include building foundation requirements appropriate to site-specific conditions, the recommendations enumerated in the Geotechnical Report, and the conditions of approval from LADBS Grading Division. As such, the Project would not exacerbate expansive soil conditions at the Site such that direct or indirect risks to life or property would be created. **Therefore, impacts under the Project and the Flexibility Option would be less than significant with respect to expansive soils, and no mitigation measures are necessary.**

### (2) Mitigation Measures

Under both the Project and the Flexibility Option, impacts related to expansive soils would be less than significant; no mitigation measures would be required.

### (3) Level of Significance after Mitigation

Under both the Project and the Flexibility Option, impacts related to expansive soils would be less than significant without mitigation.

***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 waste water?***

### (1) Impact Analysis

#### *(a) Project*

As discussed in the Initial Study (**Appendix A.2** of this Draft EIR), no septic tanks or alternative disposal systems are necessary, nor are they proposed. **Therefore, no impact would occur under the Project with respect to the use of septic tanks or alternative waste water disposal systems; no mitigation measures would be required**.

#### *(b) Flexibility Option*

This threshold would apply to a project only if it was located in an area not served by an existing sewer system. The Project Site is located in a developed area of the City, which is served by a wastewater collection, conveyance, and treatment system operated by the City. The Flexibility Option would connect to the existing wastewater system. Similar to the Project, no septic tanks or alternative disposal systems are necessary, nor are they proposed. **Therefore, no impact**

[36] See page 11 of the Geotechnical Report in **Appendix D.1** of this Draft EIR.

**would occur under the Flexibility Option with respect to the use of septic tanks or alternative wastewater disposal systems; no mitigation measures would be required**.

### (2) Mitigation Measures

Under both the Project and the Flexibility Option, no impacts related to septic tanks or alternative wastewater disposal systems would occur; no mitigation measures would be required.

### (3) Level of Significance after Mitigation

Under both the Project and the Flexibility Option, no impacts related to septic tanks or alternative wastewater disposal systems would occur without mitigation.

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

Because the Flexibility Option would be located on the same Project Site as the Project and would be subject to the same site conditions and regulatory requirements, the conclusions regarding the impact analysis and impact significance determination presented below for the Project would be the same under the Flexibility Option.

### (1) Impact Analysis

#### *(a) Paleontological Resources*

As detailed above, surface deposits throughout the Project Site and vicinity consist of surficial younger alluvium on top of older Quaternary Alluvium, which has yielded fossils of numerous Ice Age animals in the Los Angeles area. Findings of the paleontological resource records search (from the Natural History Museum of Los Angeles County) revealed there are no known fossil records associated with the Project Site; however, nearby vertebrate fossil localities were collected from depths as shallow as 20-35 feet (Mission Road/Daly Street) to a deep of 43 feet (Hill Street/12th Street). These locations are approximately 1.9 miles to the northeast and 1.3 miles to the west of the Project Site, respectively. Vertebrate fossils were also discovered 2 miles northeast of the Project Site during excavation for a storm drain at an unknown depth.

The Paleontological Assessment concluded that the surficial sediments underlying the Project Site near the surface, identified as younger Quaternary Alluvium, have low paleontological sensitivity that increases with depth to high paleontological sensitivity near its transition to older Quaternary Alluvium. Additionally, the older Quaternary Alluvium underlying the surficial sediments has high paleontological sensitivity. Based upon the depth to this older Alluvium to the north and northwest of the Project Site (as little as 10 feet below the surface)[37] and the depth at which fossils have been found within 1.2 to 2-miles of the Project Site (as little as 20 feet below

[37] ESA, 1100 E. 5th Street Project Paleontological Resources Assessment Report, pages 14-15. (**Appendix D.2** of this Draft EIR)

the surface), the Paleontological Assessment estimated that the transition from low to high sensitivity sediments could occur at around 15 feet below the surface on the Project Site itself.

The Project would require excavation to a maximum depth of approximately 50 feet below the surface to construct the three-level subterranean parking structures, building foundations, and infrastructure and utility improvements (e.g., sewer, electrical, water, and drainage systems). Thus, the possibility exists that Project excavation into high sensitivity sediments could significantly impact paleontological resources that were not encountered during prior construction or other human activity. Accordingly, mitigation measure MM GEO-1, outlined below under Mitigation Measures, would require the retention and involvement of a Qualified Paleontologist to provide technical and compliance oversight of all work as it relates to paleontological resources and a paleontological monitor to monitor all ground disturbing activities in previously undisturbed sediments that exceed 15 feet in depth in previously undisturbed older Alluvial sediments which have high sensitivity for encountering paleontological resources or as determined necessary by the Qualified Paleontologist. In the event paleontological materials are encountered, the Paleontologist shall be allowed to temporarily divert or redirect grading and excavation activities in the area of the exposed material to facilitate evaluation and, if necessary, salvage. Therefore, implementation of Mitigation Measure MM GEO-1 would ensure that any potential impacts related to paleontological resources would be less than significant.

**Therefore, following implementation of mitigation measure MM GEO-1, the impacts of the Project and Flexibility Option on paleontological resources would be less than significant with mitigation.**

### *(b) Unique Geological Features*

The Project Site is a flat parcel currently developed with one single-story industrial warehouse and an associated surface parking lot. Nearly the entire Project Site is paved with concrete and asphalt. No distinct and/or prominent geologic or topographic features, such as hilltops, ridges, slopes, canyons, ravines, rock outcrops, water bodies, streambeds, or wetlands, currently exist on the Project Site.

**Therefore, no impact would occur under the Project or the Flexibility Option with respect to destruction of distinct and prominent geologic or topographic features; no mitigation measures would be required.**

## (2) Mitigation Measures

Under both the Project and the Flexibility Option, construction impacts to paleontological resources would require the following mitigation measure:

**MM GEO-1** A Qualified Paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards shall be retained by the Applicant or its Successor 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 be responsible for monitoring and overseeing paleontological monitors (meeting SVP standards) that will observe Project grading and excavation activities.

The Qualified Paleontologist shall conduct construction worker paleontological resources sensitivity training prior to the start of ground disturbing activities (including vegetation removal, pavement removal, etc.). In the event construction crews are phased, additional trainings 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 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.

Paleontological resources monitoring shall be performed by a qualified paleontological monitor (meeting SVP standards) under the direction of the Qualified Paleontologist. Paleontological resources monitoring shall be conducted for all ground disturbing activities in previously undisturbed sediments that exceed 15 feet in depth in previously undisturbed older Alluvial sediments which have high sensitivity for encountering paleontological resources. However, depending on the conditions encountered, full-time monitoring within these sediments can be reduced to part-time inspections or ceased entirely if determined adequate by the Qualified Paleontologist. The surficial Alluvium has low paleontological sensitivity and so work in the upper 15 feet of the Project Site does not require monitoring. The Qualified Paleontologist shall spot check the excavation on an intermittent basis and recommend whether the depth of required monitoring should 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.

If construction or other Project personnel discover any potential fossils during construction, regardless of the depth of work or location, work at the discovery location shall cease in a 50-foot radius of the discovery until the Qualified Paleontologist has assessed the discovery, conferred with the City, and made recommendations as to the appropriate treatment. 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, such as the LACM. 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 will be included with the final report which will be submitted to the appropriate repository and the City.

### (3) Level of Significance After Mitigation

Mitigation measure MM GEO-1 would require the retention and involvement of a Qualified Paleontologist to provide technical and compliance oversight of all work as it relates to paleontological resources and a paleontological monitor to monitor all ground disturbing activities in previously undisturbed sediments that exceed 15 feet in depth in previously undisturbed older Alluvial sediments which have high sensitivity for encountering paleontological resources or as determined necessary by the Qualified Paleontologist. In accordance with MM GEO-1, in the event paleontological materials are encountered, all grading and excavation activities would be temporarily diverted or redirected in the area of the exposed material to facilitate evaluation and, if necessary, salvage of the material. Therefore, implementation of Mitigation Measure MM GEO-1 would ensure that any potential impacts related to paleontological resources would be reduced to a less than significant level. As such, under both the Project and the Flexibility Option, impacts to paleontological resources would be less than significant with mitigation.

# 4. Cumulative Impacts

Because the Flexibility Option would be located on the same Project Site as the Project and would be subject to the same site conditions and regulatory requirements, the conclusions regarding the cumulative impact analysis and impact significance determination presented below for the Project would be the same under the Flexibility Option.

## a) Impact Analysis

### (1) Geology and Soils

Geologic, soils, and seismicity impacts are typically confined to contiguous properties or a localized area (generally within a 500-foot radius) in which concurrent construction projects in close proximity could be subject to the same fault rupture system or other geologic hazards or exacerbate erosion impacts. The Project Site is not located within an Alquist-Priolo Earthquake Fault Zone, landslide, liquefaction, or preliminary fault rupture study area (ZIMAS). In addition, City regulations and building codes require the consideration of seismic loads in structural design. For these reasons, Project implementation is not expected to result in a considerable contribution to cumulatively significant impacts related to substantial damage from fault rupture or seismic ground shaking to structures, infrastructure, or human safety, when considered together with the Related Projects defined in **Section III, Environmental Setting,** of this Draft EIR. **Accordingly, the Project's and the Flexibility Option's contribution to any cumulative impact related to the exposure of people or structures to potential substantial adverse effects involving fault rupture, ground shaking, or ground failure, as well as unstable geologic units or expansive soil, would not be cumulatively considerable and the cumulative impact would be less than significant.**

As listed in **Table III-1, List of Related Projects**, and shown in **Figure III-2, Location of Related Projects**, the Related Projects nearest to the Project that could possibly combine to contribute to cumulative soil erosion if their construction was concurrent with the Project, are Related Project

Nos. 5 and 2. Related Project No. 5 has been approved for 1101-1129 E. 5th Street / 445 S. Colyton Street, which is approximately 50 feet north of the Project Site, directly across 5th Street. Although, environmental documents prepared for Related Project No. 5 state that construction of this Related Project would begin in 2018 and the Related Project would be operational in 2021,[38] the Related Project was recently approved and construction has not been completed. Therefore, there could be some overlap with construction of Related Project No. 5 and the Project. Related Project No. 2 is located at 527 S. Colyton Street / 1147 E. Palmetto Street.[39] Preliminary environmental documents prepared for Related Project No. 2 state that construction of this Related Project would begin in 2023 and accordingly, there would be some overlap with the Project. Similar to the Project, the construction activities associated with Related Project Nos. 5 and 2 would temporarily expose soils. However, similar to the Project, LAMC standards for shoring, SCAQMD's requirements for dust control, and Regional Water Quality Control Board regulations pertaining to surface water runoff and water quality (which would require BMPs) for construction projects would prevent significant cumulative impacts related to erosion and other geological impacts. **Therefore, the Project's and the Flexibility Option's contribution to any cumulative impact related to soil erosion would not be cumulatively considerable and the cumulative impact would be less than significant.**

With regard to septic tanks, as with the Project, the Related Projects are located in developed areas of the City, which are served by a wastewater collection, conveyance, and treatment system operated by the City. It is assumed that, as with the Project, the Related Projects would connect to the existing wastewater system. Similar to the Project, no septic tanks or alternative disposal systems would be necessary. **Therefore, the Project's and the Flexibility Option's contribution to any cumulative impact related to septic tanks would not be cumulatively considerable and the cumulative impact would be less than significant.**

### (2) Paleontological Resources

The study area for the paleontological resources cumulative impacts analysis is the greater City of Los Angeles area, specifically, the extent of the Related Project sites, as listed in **Section III, Environmental Setting**, and shown in **Figure III-2** of this Draft EIR. The potential for an individual project to affect significant paleontological resources is unknown, but given the number of Related Projects, development of these projects could expose or damage paleontological resources (i.e., PRC Section 5097.5), resulting in their progressive loss. The paleontological resource records search for the Project Site and area concluded that very shallow excavations in the older Quaternary Alluvium would be unlikely to uncover significant vertebrate fossils. However, deeper excavations into older deposits may encounter paleontological resources, potentially including

[38] City of Los Angeles, Department of City Planning, Environmental Analysis Section, Draft Environmental Impact Report for the Arts District Center Project, prepared by CAJA, Environmental Services, LLC, February 2019, page II-42, available at: https://planning.lacity.org/eir/ArtsDistrictCenter/DEIR/DEIR%20Sections/II.%20Project%20Description.pdf, accessed August 23, 2022.

[39] City of Los Angeles, Department of City Planning, Environmental Analysis Section, Initial Study for the Palmetto Mixed-Use Project, October 2018, page I-17, available at: https://planning.lacity.org/eir/nops/Palmetto_Mixed-Use/InitialStudy.pdf, accessed August 23, 2022.

significant vertebrate fossils. It is expected that many of the Related Projects would be located on similar geologic deposits; therefore, development of the Related Projects could have impacts if paleontological resources were found during construction activities. However, it is unknown whether or not significant resources will be found. Additionally, similar to the Project, it is anticipated that these Related Projects would comply with the existing regulatory requirements related to the discovery of previously unknown paleontological resources. Furthermore, as part of the environmental review process for Related Projects, like the Project, it is expected that regulatory compliance measures and, if necessary, mitigation measures would be implemented to address the potential for uncovering paleontological resources. This includes monitoring, recovery, treatment, and deposit of fossil remains in a recognized repository should a previously unknown paleontological resource be discovered at the sites during construction activities. Therefore, the cumulative effects from Related Projects would not be significant.

The Project would be required to implement mitigation measure MM GEO-1, thus ensuring proper identification, treatment, and preservation of any inadvertently encountered resources, which would reduce any potentially significant impacts on paleontological resources to less than significant levels. **Therefore, to the extent impacts on paleontological resources from construction of the Related Projects may occur, the Project's and the Flexibility Option's contribution to cumulative impacts to paleontological resources would not be cumulatively considerable and the cumulative impact would be less than significant.**

## b) Mitigation Measures

Under both the Project and the Flexibility Option, cumulative impacts related to geology and soils and paleontological resources would be less than significant; no additional mitigation measures would be required.

## c) Level of Significance After Mitigation

Under both the Project and the Flexibility Option, cumulative impacts related to geology and soils and paleontological resources would be less than significant with implementation of Project-level mitigation measures MM GEO-1.