Technical Memorandum

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Date: July 28, 2022

Re: Los Angeles Department of Transportation Electric Bus Maintenance Facility - Geology and Soils Analysis

1.0 PURPOSE AND ORGANIZATION OF THIS MEMO

The purpose of this memorandum is to document the results of the geology and soils analysis as it relates to the potential environmental impacts associated with the construction and operation of the Los Angeles Department of Transportation's (LADOT) Electric Bus Maintenance Facility (EBMF or project). This study is conducted in support of the Initial Study to be prepared in compliance with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines and the National Environmental Policy Act (NEPA).

2.0 PROJECT DESCRIPTION

2.1 Project Location and Setting

The City of Los Angeles (the City) is proposing to construct the EBMF on a 5.5-acre land located at 740 and 800 East 111th Place in South Los Angeles (Assessor's Parcel Numbers [APNs] 6071-022-009 and 6071-022-013). The project site is located on light industrial zoned land and has been recently utilized as a logistics warehouse for solar panels. The site is within Council District 8's jurisdiction in the Southeast Los Angeles Community Planning Area of the City (Figures 2-1 and 2-2). The proposed project will be operated by the Los Angeles Department of Transportation (LADOT).

Figure 2-1 Regional Map

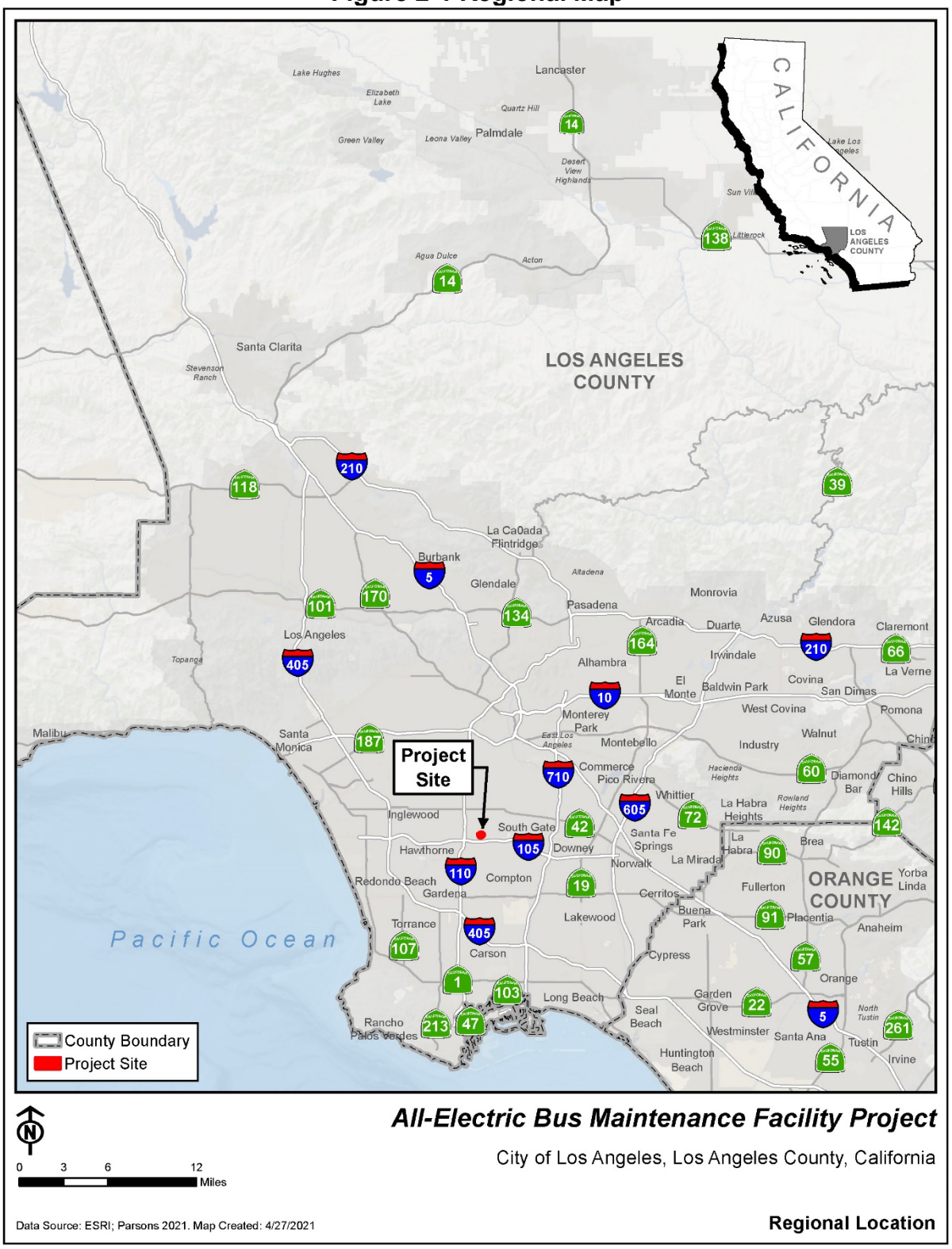
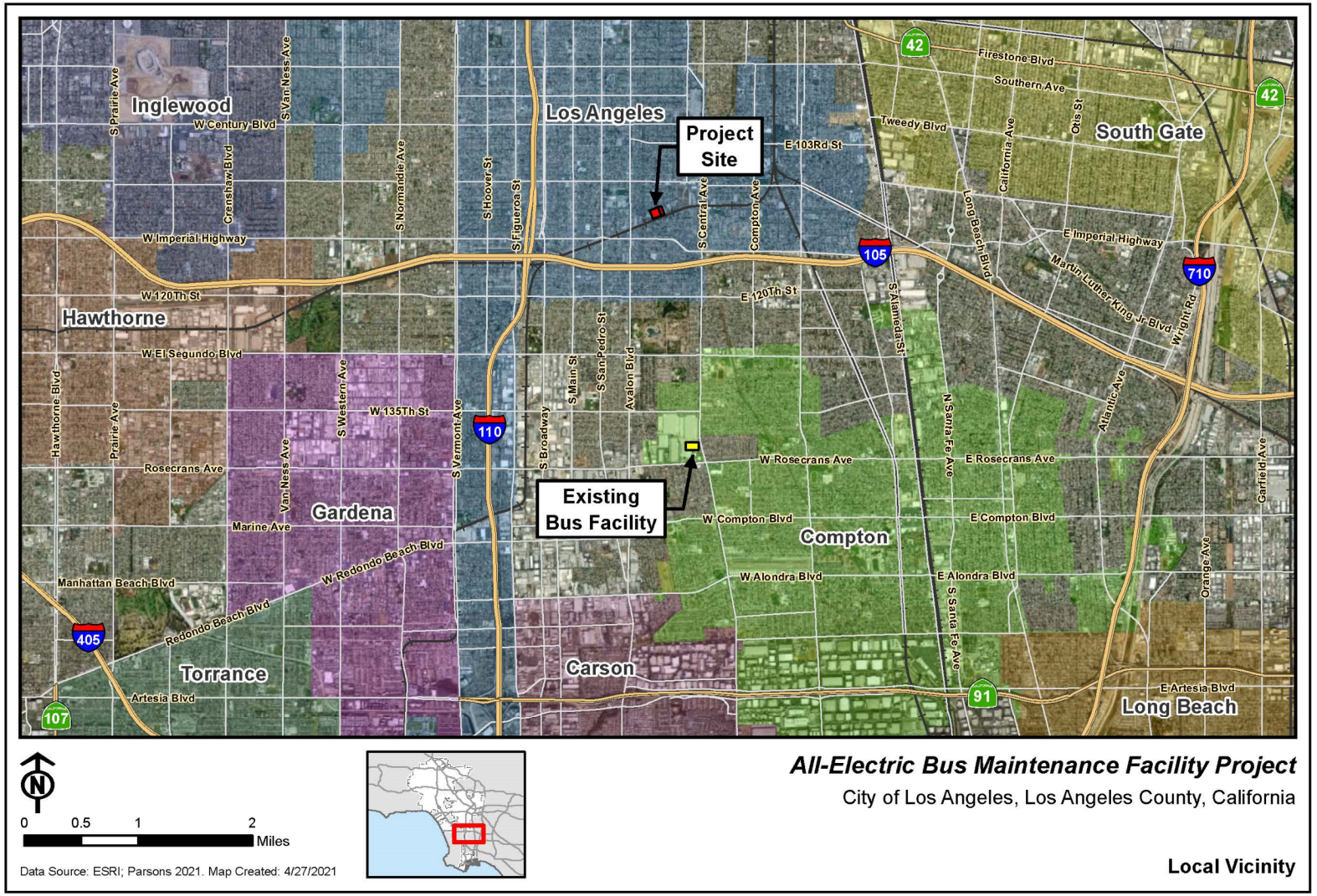


Figure 2-2 Project Location Map



The project site is on the Inglewood 7.5-minute U.S. Geological Survey quadrangle (California-Los Angeles County 7.5-minute topographic map series).

The project site is located between East 111th Place and East Lanzit Avenue, east of South Avalon Boulevard, and has a relatively flat topography. Small clusters of light-industry land uses can be found in the immediate vicinity of the project site, with adjacent land uses surrounding the project site comprised mostly of multi-family and single-family residences but also encompassing land supporting other activities, including commercial and community-oriented social services, such as education and health facilities. The area is largely urbanized and nearly built-out with little or no remaining vacant land. There are no natural features or major land formations, surface water bodies, or waterways near the project site.

The site is bounded by East 111th Place to the northwest, with single family residences across the street and by the Union Pacific Railroad (UPRR) tracks and Lanzit Avenue to the south, with single family residences beyond the tracks and street. Two buildings exist on the site: a 32,000-square-foot warehouse built in 1957 at the eastern section and a 118,800-square-foot warehouse built in 1956 at the central and western sections. The buildings sit back to back and the eastern and western ends of the site are paved as internal driveways and parking areas. The Animo James B. Taylor Charter Middle School is immediately to the east and the Kedren Health Community Center (which provides primary care, mental health care, and a Headstart/State preschool) is immediately to the west.

Access to the site is provided by two driveways off East 111th Place, a street that is designated as a local collector with one lane in each direction and allows daytime on-street parking on each side. The UPRR rail line runs parallel to East Lanzit Avenue south of the project site. Imperial Highway and Interstate 105 (I-105) are located approximately three and seven blocks south of the project site, respectively.

Figure 2-3 presents an aerial view of the project site and its general vicinity.

Figure 2-3 Aerial View of Project Site and its Immediate Vicinity

2.2 Proposed Project Description

LADOT operates and maintains its existing bus fleet from its South Los Angeles Bus Maintenance Facility, located at 14011 South Central Avenue in Compton. This current facility is not owned by the City and is leased through LADOT's operations services contractor. The existing facility does not have sufficient capacity to accommodate the additional maintenance and storage requirements of the proposed transition to electric buses and expanded charging needs of an all-electric bus fleet.

LADOT proposes to build a bus maintenance facility at the project site to serve its future electric bus fleet. The proposed EBMF is planned as a modern maintenance facility to support a larger and cleaner zero-emissions bus fleet, consisting of 130 all-electric battery bus vehicles for the DASH and Commuter Express services provided by LADOT. The EBMF would be used to store and dispatch electric buses for daily service and would provide repair and maintenance services, parking, charging, and inspection functions. The proposed facility would eventually replace the existing LADOT bus maintenance facility located at 14011 South Central Avenue (approximately 2 miles south of the new facility).

After demolition of the existing buildings on the site, the City proposes to construct several buildings and structures, including a two-story operations building to provide dispatch and administrative functions, a maintenance building with 10 bus maintenance bays, a service

building, a bus wash building, Battery-Electric Bus (BEB) parking/charging area, and a second-story parking deck for up to 360 employee/visitor vehicles, with the canopy above the parking deck topped with a 2,000-kilowatt photovoltaic (PV) system. Electrification equipment, including electrical transformers, switch cabinets, and bus chargers, is also proposed.

The EBMF would provide preventive maintenance inspections, BEB charging, light maintenance and repair, emergency maintenance, interior vehicle cleaning, and exterior vehicle washing. It would also accommodate administrative and operations functions and be used as a report base for bus operators. It would include space for employee parking, conference meeting rooms, operations and maintenance staff offices, dispatcher workstations, employee report and recreation rooms, and areas with lockers, showers, and restrooms for operations and maintenance personnel.

The proposed project facility would accommodate as many as 70 of the 30-foot-long DASH buses and 60 of the 45-foot-long Commuter Express buses, comprising a total of 130 BEBs that would be assigned to the new South Los Angeles EBMF. The facility would include surface parking spaces for 130 BEBs in an area located east of the Maintenance Building. The BEBs running easterly from Avalon Boulevard would enter the site through the west entrance driveway on East 111th Place, check in with the onsite security guard, and proceed into the site to the southern section for service and washing. Otherwise, BEBs requiring repairs would park at the bus bays along the western section. Other BEBs may directly run in a counterclockwise direction and park at the central area for charging. The BEBs would leave the site through the east exit driveway and run westerly on East 111th Place to Avalon Boulevard. Vehicles driven by bus operators, proposed project staff, other employees, and visitors would enter and exit through the center driveway that connects to a ramp leading to the second-level parking deck.

The construction schedule for the proposed project has not been determined. For environmental analysis purposes, it is assumed construction would be completed in 24 months following the final engineering design and bidding process in 2023. Any required remediation would be completed prior to the start of construction activities. Assuming no or limited remediation is necessary, project construction is tentatively scheduled to begin in mid-2024 and would be completed by mid-2026. Construction activities at the proposed project site would include mobilization and staging; building demolition; site clearing, grading and paving; new structure construction, equipment installation, and minor landscaping and finishing.

Approximately 312 employees would be working onsite, and the facility is planned to be open 24 hours per day, 7 days per week. Staff would be onsite on two or three shifts, which would be staggered depending on their work responsibilities.

3.0 EXISTING CONDITIONS

The on-site geology and soils information presented below is based on published data and the *Phase I Environmental Site Assessment* (Phase I ESA) and the Phase II

Environmental Site Assessment and Additional Site Assessment Report (Phase II ESA) completed for the proposed project site in May 2019 and October 2019, respectively.

3.1 Regional Geology

The project site is located within the Los Angeles Coastal Plain, which is bounded by mountain ranges to the north and east, by the Palos Verdes Hills to the southwest and by the Pacific Ocean to the south and west. Specifically, the project site reside within the Rosecrans Hills physiographic region in the central portion of the Los Angeles Coastal Plain, between Baldwin Hills to the north and the Dominguez Hills to the south. The Rosecrans Hills are underlain by Upper Pleistocene sediments (DWR, 1961).

According to the United States Geological Survey (USGS) topographic map for the Inglewood quadrangle, the topographic gradient in the vicinity of the project site is generally toward the northeast, and the project site is located at approximately 107 feet above mean sea level (ft amsl).

Based on the Natural Resources Conservation Service (NRCS) soil survey data, the dominant soil composition in the general area of the project site is Urban Land-Biscailuz-Hueneme. Loam, clay loam, and sand may also be present in the general area of the project site.

3.2 Regional Hydrogeology

The project site is located within the western part of the Central Basin of the Los Angeles Coastal Plain. The shallowest main aquifer is the Gardena Aquifer at depths of approximately 80 to 125 feet below ground surface (bgs). The deeper Lynwood, Silverado and Sunnyside Aquifers occur at depths of 175, 225, and 350 feet bgs, respectively (DWR, 1961).

No site-specific assessment of groundwater depth or gradient direction was obtained during the Phase I ESA or the combined Phase II ESA and Additional Site Assessment. Based on groundwater data obtained on December 10, 2018 from a site located approximately 1,300 feet east-northeast of the project site, the depth to groundwater was approximately 60-65 feet bgs with a groundwater gradient of approximately 0.001 feet per foot to the north-northwest (TetraTech 2019). Based on the topography and existing surface conditions, general surface water flow in the vicinity of the project site is generally toward the northeast.

3.3 On-Site Geology

The project area is located in the northern section of the Peninsular Ranges Geomorphic Province, which consists of northwest-southeast-trending, fault-bounded discrete blocks, with mountain ranges, broad intervening valleys, and low-lying coast plains that extend approximately 125 miles from the Transverse Ranges and the Los Angeles Basin south to the Mexican border, extending southward approximately 775 miles to the tip of Baja California. Geologic mapping shows the project area is entirely underlain by Holocene-

age alluvial gravel, sand, and clay. While not mapped within the project area, Pleistocene-age older alluvium is mapped within a half-mile of the project area and thus, is likely present in the project area at depth. Additionally, the site is developed, and artificial fill is likely present near the surface in previously disturbed portions of the site.

As part of the Phase II ESA and Additional Site Assessment fieldwork, 26 soil borings were advanced at the project site to depths ranging from 15 to 30.5 feet bgs. According to the boring logs presented in the Phase II ESA, the upper 10 to 25 feet of soil beneath the project site consists of fine-grained, loose, dry, poorly-graded sands. This is underlain by 5 to 15 feet of medium dense, moist, low plasticity silty sand. The final 5-15 feet of soils observed consisted of fine-grained, loose to very loose, dry to moist, poorly graded sands. The actual thicknesses of these three primary soil types varied throughout the project site, however, the least amount of silty sand was observed in the center of the project site. In several of the borings on the northern portion of the project site, an approximately 5-foot interval of soft, medium plasticity silt, with clay, was observed between 7.5 and 12.5 feet bgs. This silt layer was not observed in any of the central and southern borings.

4.0 REGULATORY SETTING

4.1 Federal

The Historic Sites Act of 1935 establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.”. The project site is not included in a Historic Site registry and there are no major geologic features on the site. No federal regulations specific to Geology and Soils are relevant to the CEQA and NEPA analyses for the project.

4.2 State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (California Public Resources Code, Division 2, Chapter 7.5) was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy (California Department of Conservation [DOC], 2019). The main purpose of the Alquist-Priolo Act is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. Through the facilitation of seismic retrofitting to strengthen buildings, including historical buildings, against ground shaking, policies and criteria are also intended to provide citizens with increased safety and to minimize the loss of life during and immediately following earthquakes.

Seismic Hazard Mapping Act

The Seismic Hazards Mapping Act (SHMA) was passed in 1990 to address non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides (DOC, 2019) purpose of SHMA is to reduce threats to public health and safety

and to minimize property damage caused by earthquakes, strong ground shaking, liquefaction, landslides, or other hazards caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones, and cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation must be conducted, and appropriate mitigation measures need to be incorporated into the project's design. The SHMA requires the State Geologist to establish regulatory zones (Zones of Required Investigation) and to issue appropriate maps (Seismic Hazard Zone maps).

California Building Code

Title 24 of the California Code of Regulations is the California Building Code (CBC), which is a compilation of building standards for the design, construction, quality of materials, use occupancy, location, and maintenance of all building and structures. The CBC serves as the basis for the design, construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California, except for modifications to the standards, as adopted by State agencies and local governing bodies.

The CBC requires the preparation of engineering geologic reports, supplemental ground-response reports, and/or geotechnical reports for all new construction; new structures on existing sites; and alterations to existing buildings. It also includes seismic design criteria and requirements for use in the structural design of buildings (i.e., based on seismic hazard maps and the seismic design category) and specifies building components that require special seismic certification.

4.3 Local

City of Los Angeles General Plan Safety Element

The City's General Plan Safety Element (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 generalized maps of designated areas within the City of Los Angeles (the City) that are considered susceptible to earthquake-induced hazards such as fault rupture and liquefaction.

Regarding assessment of seismic hazards, the Safety Element acknowledges that PRC Section 2699 requires that a safety element consider available seismic hazard maps prepared by the State Geologist pursuant to the Alquist-Priolo Zoning Act to assess seismic hazards. The PRC also requires that the State Geologist map active faults throughout the state. The Safety Element states that those maps which are applicable to the City are incorporated into Exhibit A of the Safety Element. The Safety Element also states that local jurisdictions are required by the SHMA to require additional studies and appropriate mitigation measures for development projects in the areas identified as potential hazard areas by the state seismic hazard maps. In addition, the Safety Element

states that as maps are released for the City, they will be utilized by the Los Angeles Department of Building and Safety (LADBS) to help identify areas where additional soils and geology studies are needed for evaluation of hazards and imposition of appropriate mitigation measures prior to the issuance of building permits.

The Safety Element acknowledges that it was based on available official maps at the time, and that exhibits in the Safety Element would be revised following receipt of reliable new information. The State of California released the current official and final Earthquake Zones of Required Investigation Map for the Inglewood Quadrangle in 1999. This map is the State of California's official earthquake fault zone map for the portion of the City that includes the project site. It remains the most current and accurate map available to delineate the boundaries of earthquake fault zones and seismic hazard zones within this portion of the City.

The Hazard Mitigation section of the Safety Element include the following Goals and Policies:

Goal 1 - A city where potential injury, loss of life, property damage and disruption of the social and economic life of the city due to fire, water related hazard, seismic event, geologic conditions or release of hazardous materials disasters is minimized.

> Policy 1.1.6 - State and federal regulations. Assure compliance with applicable state and federal planning and development regulations (e.g., Alquist-Priolo Act, SHMA, and Cobey-Alquist Floodplain Management Act).

Los Angeles Building Code

Chapter XI of the Los Angeles Municipal Code (LAMC) is the Los Angeles Building Code, which adopts by reference the California Building Standards Code. It requires compliance with the Code regulations and the recommendations of an approved geotechnical report to address site-specific soil conditions, fill placement, load-bearing requirements, foundations and other geologic and seismic factors to ensure structural integrity.

5.0 IMPACT ANALYSIS

5.1 CEQA Analysis

5.1.1 CEQA Thresholds of Significance

According to the Environmental Checklist in Appendix G of the CEQA Guidelines and the L.A. CEQA Thresholds Guide, a project may have a significant environmental impact related to geology and soils if it would:

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

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

ii) Strong seismic ground shaking?

iii) Seismic-related ground failure, including liquefaction?

iv) Landslides?

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

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

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

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?

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

5.1.2 Impacts Assessment Methodology

Based on the L.A. CEQA Thresholds Guide, a determination of impacts on geology would be made by considering the following factors:

- Description of the physical setting, paleontology, and geology of the project site and surrounding area, and
- Summary of surveys and research for the project site.

These factors are accounted for by the checklist questions of Appendix G of the CEQA Guidelines.

5.1.3 Analysis of Project Impacts

Using the Initial Study Checklist questions in Appendix G of the CEQA Guidelines and the City's Thresholds, project impacts are analyzed for significance as follows:

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?

Reference: L.A. CEQA Thresholds Guide (2006) (Section E.1); Zone Information and Map Access System (ZIMAS); California Geological Survey Special Publication 42 (DOC, 2018); NavigateLA; Earthquake Zones of Required Investigation for the Inglewood Quadrangle; Community Plan for Southeast Los Angeles.

Comment: Based on the criteria established in the L.A. CEQA Thresholds Guide, a significant impact may occur if the project were located within a State-designated Alquist-Priolo Zone or another designated fault zone.

Less than significant impact. The EBMF project site is in a seismically active region, as is most of Southern California. Based on the most recently available studies and past fault mapping, the project site is not located within a designated Earthquake Fault Zone (Alquist- Priolo Special Studies Zone). No surface faults are known to pass through or project towards the site. The closest known active fault to the project site with a mappable surface expression is the Avalon-Compton fault of the Newport-Inglewood-Rose Canyon fault zone, located approximately 1.3 miles southwest of the site.

All new structures are required to adhere to the most current building standards of the LAMC and Los Angeles Building Code (LABC), which adopts California Building Code (CBC) standards by reference, with local amendments as a Standard Condition (SC-GEO-1). Adherence to the LAMC and LABC requirements including the use of LABC seismic standards as the minimum seismic-resistant criteria, would ensure the structural integrity of all structures.

The project would not directly or indirectly lead to the risk of loss, injury, or death involving the rupture of a known earthquake fault as the project site is not located within a designated fault zone. Thus, hazards due to ground surface rupture are considered low and impacts related to surface rupture would be less than significant.

ii. Strong seismic ground shaking?

Reference: L.A. CEQA Thresholds Guide (2006) (Section E.1); ZIMAS; California Geological Survey Special Publication 42 (DOC, 2018); NavigateLA; Earthquake Zones of Required Investigation for the Inglewood Quadrangle; Community Plan for Southeast Los Angeles.

Comment: A significant impact could occur if the project were to result in an increased risk to public safety or destruction of property by exposing people, property, or infrastructure due to seismically induced ground-shaking hazards that are greater than the average risk associated with other locations in Southern California. The intensity of ground shaking depends primarily on the earthquake's magnitude, the distance from the source, and the site response characteristics.

Less than significant impact. The project site is located within the seismically active Southern California region and therefore, could be subject to seismic ground motion. While the project site is not located in a designated earthquake fault zone, there is a potential for hazards associated with strong seismic ground shaking during earthquake

events throughout the region. The proposed buildings would be subject to ground shaking and potential risk of injury to users due to strong seismic ground shaking.

The project includes the demolition of the existing buildings and the construction of new buildings and structures would be required to adhere to all current building code requirements, including the LABC. The proposed project would be designed and constructed in accordance with state and local codes and the recommendations of the geotechnical investigation for the project (SC-GEO-1). The project plans and specifications shall also be reviewed by a qualified Geotechnical Engineer to ensure proper implementation and application of the required building and seismic codes (SC-GEO-2). The project design and adherence to the regulatory requirements and federal, state, and local regulations would ensure that impacts related to seismic ground shaking would be less than significant.

iii. Seismic-related ground failure, including liquefaction?

Reference: L.A. CEQA Thresholds Guide (2006) (Section E.1); ZIMAS; California Geological Survey Special Publication 42 (DOC, 2018); NavigateLA; Earthquake Zones of Required Investigation for the Inglewood Quadrangle; Community Plan for Southeast Los Angeles.

Comment: A significant impact would occur if the proposed project were in an area identified as having a high risk of liquefaction and appropriate design measures required within such designated areas were not incorporated into the project.

Less Than Significant Impact. Liquefaction zones are areas that have a historical occurrence of liquefaction, or local geological, geotechnical, and groundwater conditions that indicate a potential for permanent ground displacements to occur. Liquefaction occurs when water-saturated sediments are subjected to extended periods of shaking. Pressure increases in the soil pores temporarily alter the soil state from solid to liquid. Liquefied sediments lose strength, in turn causing the failure of adjacent infrastructure, including bridges and buildings. Whether a soil would resist liquefaction depends on many factors, including grain size, compaction and cementation, saturation and drainage, characteristics of the vibration, and the occurrence of past liquefaction. Granular, unconsolidated, saturated sediments are the most likely to liquefy, while dry, dense, or cohesive soils tend to resist liquefaction. Liquefaction is generally considered to be a hazard where the groundwater is within 40 to 30 feet of the ground surface. Without proper soil drainage, the pore pressure, which builds up when ground motion shakes unconsolidated soil, would be more easily dissipated; thus, soils with proper drainage are less likely to liquefy.

The project site is located within a potential liquefaction hazard zone per the Earthquake Zones of Required Investigation for the Inglewood Quadrangle (CGS, 1999) and is within a City-designated liquefaction area. However, the project site has a low potential for liquefaction due to the absence of groundwater at 40 feet or less bgs (i.e., groundwater is estimated at approximately 60 feet bgs or lower at the site) and the presence of non-liquefiable clayey soils at some depths beneath the site.

The proposed demolition and construction activities would be required to adhere to all current building code requirements, including the LABC. A geotechnical investigation, including liquefaction and seismic settlement analyses, would be performed before construction activities to assess the potential for liquefaction based on soil types beneath the project site and the project would incorporate geotechnical recommendations to address potential geologic hazards at the site, including liquefaction. The project plans and specifications shall also be reviewed by a qualified Geotechnical Engineer to ensure proper implementation and application of the required building and seismic codes.

The project would not exacerbate existing environmental conditions and would not directly or indirectly cause substantial adverse effects involving seismic-related ground failure, including liquefaction. The project design and adherence to the regulatory requirements and state and local regulations would ensure that impacts related to ground failure and liquefaction would be less than significant. No mitigation is required.

iv. Landslides?

Reference: L.A. CEQA Thresholds Guide (2006) (Section E.1); ZIMAS; California Geological Survey Special Publication 42 (DOC, 2018); City of Los Angeles General Plan Safety Element Exhibit C; Community Plan for Southeast Los Angeles; USGS Topographic Map for the Inglewood Quadrangle.

Comment: A significant impact could occur if the project site is in an area identified as having a high risk of landslides.

No Impact. Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. Landslide zones are areas where landslide movement has previously occurred, or where local topographic, geological, geotechnical, and subsurface water conditions indicate the potential for permanent ground displacement. The project site is located on relatively flat terrain. There are no historic occurrences of landslides in the project site's vicinity, according to the California Landslide Inventory maintained by the Department of Conservation. According to the Earthquake Zones of Required Investigation for the Inglewood Quadrangle, the project site is outside of mapped Earthquake-Induced Landslide Zones. Thus, the probability of landslides occurring within or near the project site is very low due to the general lack of elevation difference in slope geometry across or adjacent to those portions of the project site. Additionally, the project site is not identified within a City-designated hillside area or earthquake-induced hillside area. Also, project construction and operation are not anticipated to exacerbate existing or future potential for landslides to occur. Therefore, the project would not increase the risk of loss, injury, or death involving landslides. No impacts related to landslides would occur and no mitigation is required.

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

Reference: L.A. CEQA Thresholds Guide (Sections E.2); USGS Topographic Map for the Inglewood Quadrangle.

Comment: The project could have significant sedimentation or erosion impacts if it were to (a) constitute a geologic hazard to other properties by causing or accelerating instability from erosion; or (b) accelerate natural processes of wind and water erosion and sedimentation resulting in sediment runoff or deposition that would not be contained or controlled on the project site.

Less than significant impact. The proposed project would include ground-disturbing activities, such as excavation, grading, compaction of soil, and paving. These activities could result in the potential for erosion to occur at the project site, although soil exposure would be temporary and short-term in nature. During construction, best management practices (BMPs) would be implemented to minimize soil erosion and runoff, as required under the NPDES Construction General Permit. All grading, excavation, and earthwork activity would be performed under the observation and testing of a qualified Geotechnical Engineer during ground-disturbing activities. The project design and the adherence to state and local regulations would ensure impacts related to soil erosion would be less than significant.

Additionally, the project site would be largely covered by pavement and buildings after construction. No large areas of exposed soil would exist that would be exposed to the effects of erosion by wind or water. Due to the implementation of standard engineering practices, BMPs, and paved areas at the project site, the project would not have significant sedimentation or erosion impacts which would constitute a geologic hazard to other properties by causing or accelerating instability from erosion; or would accelerate natural processes of wind and water erosion and sedimentation resulting in sediment runoff or deposition that would not be contained or controlled on the project site. As such, the proposed project would have less than significant impact on erosion and loss of topsoil. No mitigation is required.

c) *Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?*

Reference: L.A. CEQA Thresholds Guide (Section E.1); Phase I ESA, Phase II ESA and Additional Site Assessment Report (Stantec, 2019)

Comment: The project could have a significant impact if it is built in an unstable area without proper site preparation, or were to cause or accelerate geologic hazards causing substantial damage to structures or infrastructure, or if it were to expose people to a substantial risk of injury.

Less than significant impact. One of the major types of liquefaction-induced ground failure is the lateral spreading of mildly sloping ground. Lateral spreading involves primarily the side-to-side movement of earth materials due to ground shaking and is evidenced by near-vertical cracks to the predominately horizontal movement of the soil mass involved. As discussed above in Section 3.7.3 question (a)(iii.), the project site is located within potential liquefaction hazard zones per the Earthquake Zones of Required Investigation for the Inglewood Quadrangle (CGS, 1999) and per the City-designated

liquefaction area. The project site appears to have a low potential for liquefaction due to the absence of groundwater at 40 feet or less bgs (i.e., groundwater is estimated at approximately 60 feet bgs or lower at the site) and the presence of non-liquefiable clayey soils at some depths. However, as stated in SC-GEO-1, a geotechnical investigation, including liquefaction and seismic settlement analyses, would be performed before construction activities to further assess the potential for on-site geologic hazards (e.g., liquefaction) based on soil types beneath the project site. The demolition and construction activities would be required to adhere to all current building code requirements, including the LABC, which incorporates current seismic design provisions from the CBC. The project plans and specifications shall also be reviewed by a qualified Geotechnical Engineer to ensure proper implementation and application of the required building and seismic codes (SC-GEO-2). The project's design, adherence to the regulatory requirements, and federal, state, and local regulations would ensure impacts related to liquefaction would be less than significant.

Subsidence is the lowering of surface elevation due to changes occurring underground, such as the extraction of large amounts of groundwater, oil, or gas. When groundwater is extracted from aquifers at a rate that exceeds the rate of replenishment, overdraft occurs, which can lead to subsidence. However, the project does not anticipate the extraction of groundwater, oil, or gas from the project site nor is the project site located in an area where that extraction is occurring. Therefore, no impacts related to subsidence would occur.

Collapsible soils consist of loose dry materials that collapse and compact under the addition of water or excessive loading. Collapsible soils are prevalent throughout the southwestern United States, specifically in areas of young alluvial fans. Soil collapse occurs when the land surface is saturated at depths greater than those reached by typical rain events. According to the Phase I ESA and Phase II ESA and Additional Site Assessment Report, the subsurface conditions at the project site generally consists of existing urban fill soils placed during previous site grading operations over poorly graded sands and silty sands, as encountered in the borings drilled to the maximum depth explored of approximately 30.5 feet bgs. The observed fill soils consist primarily of silty sands, clayey sands, and sandy clays. The depths of the fills were approximately 5 feet bgs. All grading, excavation, and earthwork activity would be performed under the observation and testing of a qualified Geotechnical Engineer during the ground-disturbing activities. The project design and the adherence to state and local regulations would ensure impacts related to collapsible soils would be less than significant.

Additionally, the proposed project would be constructed in accordance with the latest version of the LABC and other applicable state and local codes relative to site-specific geologic and seismic hazards. As such, impacts associated with on- or off-site landslides, lateral spreading, subsidence, and collapses would be less than significant.

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?

Reference: Phase I ESA, Phase II ESA and Additional Site Assessment Report (Stantec, 2019)

Comment: A significant impact may occur if the project were built on expansive soils without proper site preparation or design features, thereby posing a hazard to life and property.

Less than significant impact. Expansive soils are clay-based soils that tend to expand (increase in volume) as they absorb water and shrink (lessen in volume) as water is drawn away. Foundations constructed on expansive soils are subject to uplifting forces caused by the swelling. Without proper management, heaving and cracking of both building foundations and slabs on grade could result.

Soils encountered during the Phase II ESA and Additional Site Assessment activities consisted of sands and silty sands; however, no geotechnical investigation has been completed for the project site. A geotechnical investigation should be completed at the project site to assess the potential need for mitigation of expansive soil. While expansive soils are not anticipated, if expansive soils are encountered at the excavation depth, on-site soils with an expansion index exceeding 20 should not be re-used for compaction within 5 feet below the planned finish grade or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the Geotechnical Engineer based on soil observations made during grading. Any proposed import fill should have an expansion index of less than 20 and should be evaluated and approved by the Geotechnical Engineer before importing to the site.

The project would construct several buildings and structures on the proposed site. Construction of the EBMF would be required to comply with the LABC, LAMC, and other applicable building codes. Compliance with these existing regulations would ensure that the project would not exacerbate any existing soil conditions. Impacts would be less than significant, and no mitigation measures would be required.

e) *Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?*

Reference: L.A. CEQA Thresholds Guide (Section E.3).

Comment: A significant impact would occur if the proposed project were built on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems, if such systems were proposed.

No impact. The construction and operation of the proposed project would not involve the use of septic tanks or alternative wastewater disposal systems. Infrastructure for the disposal of wastewater already exists at the project site as the existing buildings have active sanitary connections to the 8-inch sewer line on East 111th Place that is part of the City's public sewer system. The project would not use septic tanks or an on-site

wastewater disposal system but would be connected to the same sewer line and public sewer system. Therefore, no impact associated with the use of alternative wastewater treatment systems would occur. No mitigation is required.

f) Directly or indirectly destroy a unique geologic feature?

Reference: L.A. CEQA Thresholds Guide (Section D.1); City of Los Angeles General Plan Conservation Element; USGS Topographic Map for the Inglewood Quadrangle.

Comment: Based on the criteria established in the L.A. CEQA Thresholds Guide, a significant impact could occur if grading or excavation activities associated with the project were to disturb unique paleontological resources or unique geologic features that presently exist within the project site.

No impact. The project site is within the urbanized areas of the City. According to the Phase II ESA and Additional Site Assessment, the subsurface conditions at the project sites generally consist of existing fill soils placed during previous site grading operations over sands and silty sands, as encountered in the borings drilled to the maximum depth explored of approximately 30.5 feet bgs. Native soils underlying the project site have the potential to contain sensitive paleontological resources that may be disturbed during excavation activities. The site has a relatively flat topography and there are no unique geologic features beneath the project site. Project excavation activities include shallow excavations for the installation of the EBMF building footings and supporting structures. No impact on unique geologic features would occur from the construction and the operation of the project.

5.2 NEPA Analysis

5.2.1 No Build Alternative

The No Build Alternative proposes no improvements at the site and to the existing bus maintenance facilities at the South Yard. Under the No Build Alternative, no demolition, excavation or construction activities would occur and thus, no changes to local geology at the project site would occur. No adverse effects related to geology and soils would occur at the site under the No Build Alternative for the proposed project.

5.2.2 Build Alternative

Implementation of the Build Alternative would result in ground disturbance, excavation and trenching at the project site for the demolition of existing structures and construction of new structures and support infrastructure. During the two-year construction period, the on-site soils would be disturbed but after construction, the site would remain largely paved and relatively flat, as existing. The project would be designed in accordance with current building codes to ensure the structural integrity of structures and infrastructure in order to minimize geologic and seismic hazards to the project. Impacts to geology would be less than significant.

6.0 RECOMMENDED MEASURES

Based on the analysis above, the project would need to comply with the following Standard Conditions, which would prevent the potential for significant adverse impacts pertaining to geology and soils:

SC-GEO-1: In accordance with the Los Angeles Municipal Code (LAMC) and Los Angeles Building Code (LABC), a geotechnical investigation shall be prepared to assess site-specific geologic conditions, including the potential for liquefication, soil expansion, and other geologic hazards at the project site. Applicable standards in the LABC and the recommendations of the geotechnical investigation shall be incorporated into the design and construction of the project.

SC-GEO-2: The project plans and specifications shall be reviewed by a qualified Geotechnical Engineer to ensure proper implementation and application of the required building and seismic codes. Additionally, all grading, excavation, and earthwork activity should be performed under the observation and testing of a qualified Geotechnical Engineer during the following stages:

- Site grading
- Excavation activities
- Any other ground-disturbing activities
- When any unusual or unexpected geotechnical conditions are encountered.

7.0 REFERENCES

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8.0 PREPARERS

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