Contra Costa County, Department of Conservation and Development,
Current Planning Division

PARTIALLY RECIRCULATED DRAFT Environmental Impact Report FSRE Industrial Concord Project County File Number CDDP21-03022 Contra Costa County, California

State Clearinghouse Number 2024070591

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PURPOSE OF RECIRCULATION

This is a Partial Recirculation of the FSRE Industrial Concord Project (proposed project) Draft Environmental Impact Report (Draft EIR). Section 3.6 Geology and Soils and Appendix E: Geology and Soils Supporting Information of the Draft EIR are being recirculated because the original Appendix E file was not legible due to a technological error. Draft EIR Section 3.6 Geology and Soils has not been revised and none of the mitigation measures or significance conclusions presented in the Draft EIR have changed as a result of this correction. Section 3.6 Geology and Soils is being included in the partial recirculation to provide context for the recirculated Appendix E.

There is no new information that would require recirculation of any other portion of the Draft EIR; accordingly, recirculation of the entire EIR is not necessary or required.

IMPORTANT NOTICE TO REVIEWERS

Consistent with CEQA Guidelines Section 15088.5, reviewers are requested to limit their comments to Section 3.6 Geology and Soils and Appendix E: Geology and Soils Supporting Information as those are the only sections that are being recirculated. For comments received during the recirculation period, CEQA directs the County to respond only to those comments that relate to the portions of the EIR that were recirculated.

The Partially Recirculated Draft EIR will be combined with the previously circulated Draft EIR as part of the Final EIR.

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3.6 - Geology and Soils

3.6.1 - Introduction

This section describes existing conditions related to geology and soils in the region and project area as well as the relevant regulatory framework. This section also evaluates the possible impacts related to geology and soils that could result from implementation of the proposed project. Information included in this section is based, in part, on the Contra Costa County 2045 General Plan (2045 General Plan) and the United States Geological Survey (USGS). Additional resources include the Geotechnical Exploration Report prepared by ENGEO Incorporated (ENGEO) and the Paleontological Records Search conducted by Dr. Kenneth Finger, which are included in Appendix E.

No public comments were received during the Environmental Impact Report (EIR) scoping period related to Geology and Soils.

3.6.2 - Environmental Setting

Geologic Setting

Contra Costa County Area

Contra Costa County (County) is in the Coast Ranges geomorphic province of California. The Coast Ranges have experienced a complex geological history characterized by Late Tertiary folding and faulting that has resulted in a series of northwest trending mountain ranges and intervening valleys. Bedrock in the Coast Ranges consists of igneous, metamorphic, and sedimentary rocks that range in age from Jurassic to Pleistocene. The present physiography and geology of the Coast Ranges are the result of deformation and deposition along the tectonic boundary between the North American plate and the Pacific plate. Plate boundary fault movements are largely concentrated along the well-known fault zones in the area, which include the San Andreas, Hayward, and Calaveras Fault Zones, as well as other lesser-order faults.

Project Site

The project site is in the northern portion of the County and is relatively flat, with elevation of approximately 19 feet above mean sea level (AMSL). The ground surface of the western portion of the project site drops to approximately 16 feet AMSL. A drainage channel, with a minimum elevation of approximately 12 feet AMSL, runs northwest to southeast at the northern portion of the project site.[1] The project site is in the northern portion of the Clayton-Concord valley, bounded on the east by the Los Medanos Hills and on the west by the Northern East Bay Hills block.

Regional geologic mapping indicates that the project site is underlain by Holocene-age alluvial deposits.[2] The subsurface explorations at the project site encountered geologic conditions that are

[1] ENGEO Incorporated (ENGEO). 2023. Geotechnical Exploration Report, Distribution Center, 555 Sally Ride Drive, Concord, California. Project No. 16837.001.001. August 4, 2023.

[2] Dibblee, T.W., and J.A. Minch. 2005. Geologic map of the Walnut Creek quadrangle, Contra Costa County, California. Dibblee Foundation Map DF-149. Dibblee Geological Foundation. Map. Scale 1:24,000.

consistent with the regional geologic mapping of the area. The predevelopment conditions consisted of low-lying tidal marsh and a portion of Grayson Creek.

Based on exploratory borings and cone penetration tests (CPTs), the subsurface conditions consist of fill (Qaf), Holocene-age basin deposits (Qhb), Late Pleistocene-age alluvium (Qpf), and Older alluvium (QTu). The fill occurs between 3 and 7 feet below ground surface (BGS) and is composed of medium dense to dense clayey sand, very still to still clay, and sandy silt. Information regarding the placement of the fill is not available; as such, the existing fill is considered nonengineered. The Holocene-age basin deposits occur below the existing fill and are encountered up to approximately 50 feet below the fill. These deposits are composed of soft to stiff, lean to fat clay and contain abundant organic material (i.e., roots and plant matter). The Late Pleistocene-age alluvium occurs below the basin deposits from approximately 55 to 75 feet BGS. The older alluvium occurs at a depth of approximately 75 feet BGS and is composed of very dense, clayey sand.

Existing Soils

Corrosive soils are a geologic hazard because they react with concrete and ferrous metals, which can cause damage to foundations and buried pipelines. Expansive soils are a geologic hazard because an increase in soil volume can exert forces on structures and, thus, damage building foundations, walls, and floors. In general, areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or loose unconsolidated alluvial sediments. When these soils dry out and shrink, structural damage can occur.

Soil liquefaction results from loss of strength during cyclic loading, such as imposed by earthquakes. The soil considered the most susceptible to liquefaction is clean, loose, saturated, uniformly graded fine sand below the groundwater table. Empirical evidence indicates that loose, fine-grained soil (including low-plasticity silt and clay) is also potentially liquefiable.

Contra Costa County

The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) has characterized the majority of native, undisturbed soils in the County according to three soil associations: (1) nearly level to strongly sloping, somewhat excessively drained to very poorly drained soils on valley fill, basins, low terraces, flood plains, and alluvial fans; (2) nearly level, poorly drained and very poorly drained soils on the Delta, flood plains, and saltwater marshes and tidal flats; and (3) nearly level to very steep, moderately well drained to excessively drained soils on terraces and mountainous uplands.[3]

Project Site

As discussed above, the subsurface conditions consist of existing fill, soft to stiff clay basin deposits, and alluvial deposits.

[3] United States Department of Agriculture (USDA). Natural Resources Conservation Service (NRCS) Web Soil Survey. 2021. General Soil Map: Contra Costa County, California.

The Geotechnical Exploration Report concluded that the soil at the project site has a Plasticity Index between 28 and 30, which corresponds to a high expansion potential. The exploration encountered existing nonengineered fill material from 3 to 7 feet in thickness at the project site.

Seismicity

The term *seismicity* describes the effects of seismic waves that are radiated from an earthquake fault in motion. Seismicity can result in seismic-related hazards such as fault rupture, ground shaking, and liquefaction faults form in rocks when stresses overcome the internal strength of the rock, and fault rupture occurs when movement on a fault breaks through to the surface and can result in damage to infrastructure and persons. Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. Strong ground shaking from an earthquake can result in damage, with buildings shifted off their foundations and underground pipes broken. Liquefaction occurs when an earthquake causes ground shaking that results in saturated soil to lose shear strength, deform, and act like a liquid. When liquefaction occurs, it can result in ground failure that can result in damage to roads, pipelines, and buildings.

Contra Costa County Area

According to the 2045 General Plan, several significant (i.e., stronger than magnitude 5.0) earthquakes have impacted the County, including the 1906 San Francisco earthquake (magnitude 7.8), 1989 Loma Prieta earthquake (magnitude 6.9), and 2014 South Napa earthquake (magnitude 6.0).

As stated in the 2045 General Plan, there are five major faults running through the County:

- Calaveras (North Central) Fault
- Concord-Green Valley Fault
- Greenville Fault
- Hayward Fault
- Mount Diablo Fault

The 2045 General Plan states that movement on any of these faults or other fault lines in the region could cause earthquakes and fault rupture. The Hayward Fault is particularly concerning as it runs beneath densely populated sections of Contra Costa and Alameda Counties. A significant earthquake on the Hayward Fault is predicted to result in catastrophic damage to buildings and infrastructure and substantial loss of life.

Project Site

According to the Geotechnical Exploration Report, the main active trace of the Concord fault zone is located along the Walnut Creek flood control channel approximately 4 miles east of the project site. The Working Group on California Earthquake Probabilities (WGCEP) evaluated the 30-year probability of a Moment Magnitude 6.7 (or greater) earthquake occurring on the known fault systems in the Bay Area, including the Concord fault zone. It is estimated that there is a 72 percent

probability for the entire Bay Area, a 14.3 percent probability for the Hayward Fault Zone, a 7.4 percent probability for the Calaveras fault zone, a 6.4 percent probability for the San Andreas fault zone, and a 3.5 percent for the Concord-Green Valley fault.

Based on the historic seismicity, proximity to known faults, and the projections for the Bay Area, it is expected that the project site would experience strong seismic ground shaking during the lifetime of the proposed project.

As shown in the 2045 General Plan Figure HS-17, shown in Exhibit 3.6-1, the project site is approximately 0.5 mile west of the Concord-Green Valley Fault and is located within an area of severe earthquake shaking hazard threat.

Slope Disturbance

Slope disturbance from long-term geologic cycle of uplift, mass wasting, intense precipitation or wind, and gravity can result in slope failure in the form of mudslides and rock fall. Mass wasting refers to a variety of erosional processes from gradual downhill soil creep to mudslides, debris flows, landslides, and rock fall—processes that are commonly triggered by intense precipitation or wind, which varies according to climactic shifts. Often, various forms of mass wasting are grouped together as landslides, which are generally used to describe the downhill movement of rock and soil. Soil creep is a long-term, gradual downhill migration of soil under the influence of gravity and is generally on the order of a fraction of an inch per year. These soils can creep away downslope sides of foundations and reduce lateral support.

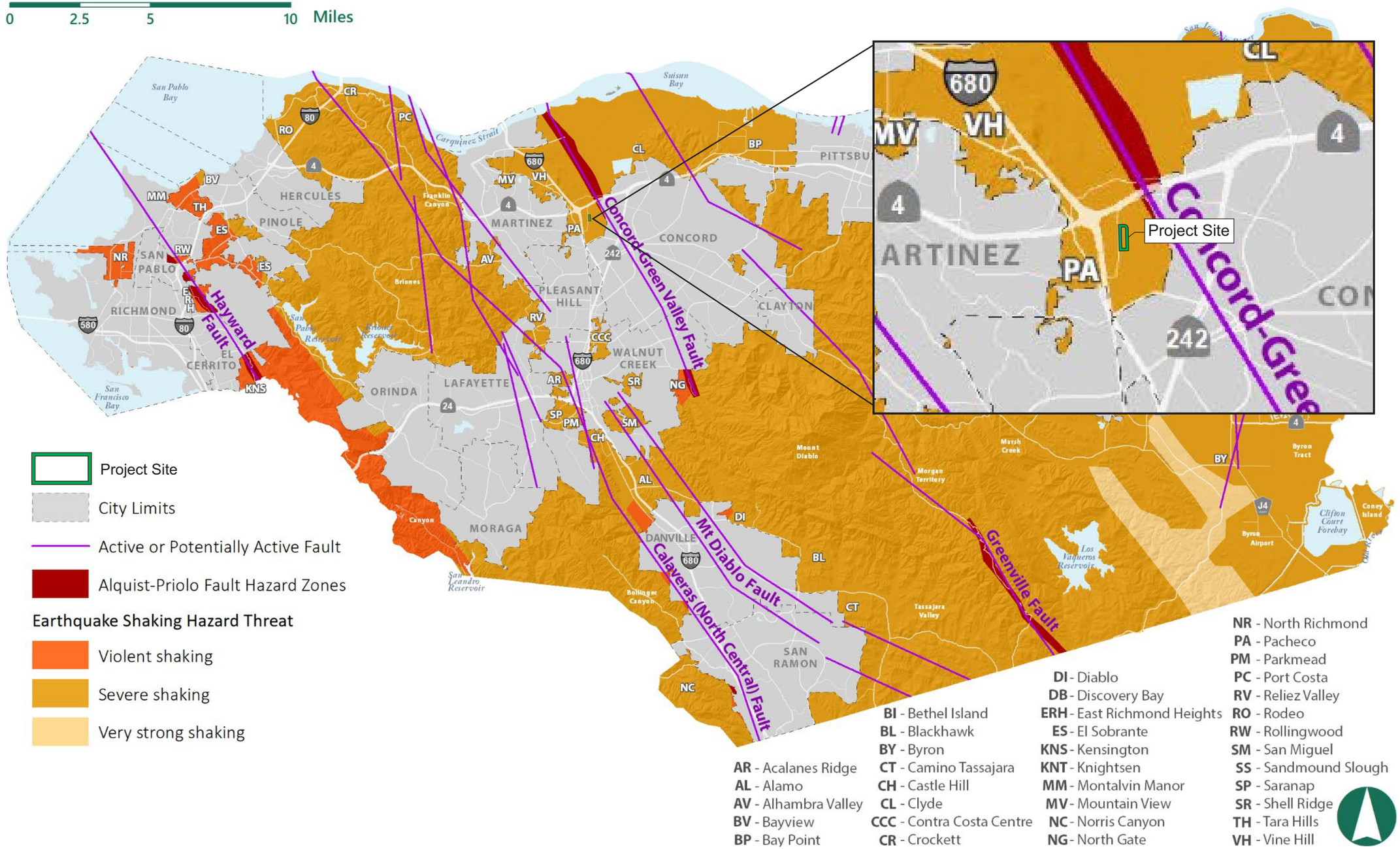
Liquefaction is another earthquake hazard that can result in slope disturbance. Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporarily loses strength resulting from the buildup of excess pore water pressure. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits. Four kinds of ground failure commonly result from liquefaction: lateral spread, flow failure, ground oscillation, and loss of bearing strength (Appendix E).

Project Site

According to the Geotechnical Exploration Report, the project site is mapped within an area classified as having a moderate susceptibility to liquefaction; and according to the 2045 General Plan Figure HS-18A Liquefaction Susceptibility, the project site is located in a high liquefaction susceptibility area. However, an analysis of field testing conducted as part of the geotechnical investigation concluded that the liquefaction potential at the site is negligible. Additionally, the risk of landslides at the project site is considered low to negligible, as shown by 2045 General Plan Figure HS-18B Landslide Hazards and given that the site is essentially flat and is not surrounded by hillsides.

Paleontological Resources

The Paleontological Records Search (Appendix E) indicates that there are no fossil localities within the boundary of the project site.



Source: Contra Costa County 2003.

FIRSTCARBON SOLUTIONS™

Exhibit 3.6-1
Contra Costa County Earthquake Hazards

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Closest to the project site, at more than 1 mile to the southwest, are two Late Pleistocene localities that yielded an assemblage of 6,930 specimens, including boney fish, amphibians, reptiles, birds, and mammals. Despite the distance between these two localities and the project site, Pleistocene deposits likely underlie the surficial Holocene layer of the project site.

The proposed project site is situated on Holocene alluvium, which is too young to be fossiliferous. Potentially fossiliferous rocks ranging from Miocene to Cretaceous are mapped on the outskirts of the 0.5-mile search area, but it is impossible to tell which extend in the subsurface to the project site. Regardless, they most likely are too deeply buried to be impacted by project-related excavations.

3.6.3 - Regulatory Framework

Federal

National Earthquake Hazards Reduction Program

The National Earthquake Hazards Reduction Program (NEHRP) was established by the United States Congress when it passed the Earthquake Hazards Reduction Act of 1977, Public Law 95–124. In establishing the NEHRP, Congress recognized that earthquake-related losses could be reduced through improved design and construction methods and practices, land use controls and redevelopment, prediction techniques and early warning systems, coordinated emergency preparedness plans, and public education and involvement programs. The four basic goals remain unchanged:

- Develop effective practices and policies for earthquake loss reduction and accelerate their implementation.
- Improve techniques for reducing earthquake vulnerabilities of facilities and systems.
- Improve earthquake hazards identification and risk assessment methods, and their use.
- Improve the understanding of earthquakes and their effects.

Several key federal agencies contribute to earthquake mitigation efforts. There are four primary NEHRP agencies:

- National Institute of Standards and Technology of the Department of Commerce
- National Science Foundation
- USGS of the Department of the Interior
- Federal Emergency Management Agency (FEMA) of the Department of Homeland Security

Implementation of NEHRP priorities is accomplished primarily through original research, publications, and recommendations to assist and guide State, regional, and local agencies in the development of plans and policies to promote safety and emergency planning.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program, authorized by Section 402(p) of the federal Clean Water Act, controls water pollution by regulating point sources, such as construction sites and industrial operations that discharge pollutants into waters of the United States. A Stormwater Pollution Prevention Plan (SWPPP) is required to control discharges from a project site, including soil erosion, to protect waterways. A SWPPP describes the measures or practices to control discharges during both the construction and operational phases of the project. A SWPPP identifies project design features and structural and nonstructural Best Management Practices (BMPs) that will be used to control, prevent, remove, or reduce stormwater pollution from the site, including sediment from erosion.

Society of Vertebrate Paleontology Guidelines

The Society of Vertebrate Paleontology (SVP), a national scientific organization of professional Vertebrate Paleontologists, has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, analysis, and curation. Most practicing professional Paleontologists in the nation adhere to the SVP's assessment, mitigation, and monitoring requirements, as specifically spelled out in its standard guidelines.[4]

State Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code [PRC] §§ 2621—2630) was passed in 1972 to provide a Statewide mechanism for reducing the hazard of surface fault rupture to structures used for human occupancy. The main purpose of the Act is to prevent the siting of buildings used for human occupancy across the traces of active faults. It should be noted that the Act addresses the potential hazard of surface fault rupture and is not directed toward other earthquake hazards, such as seismically-induced ground shaking or landslides.

The law requires the State Geologist to identify regulatory zones (known as Earthquake Fault Zones or Alquist-Priolo Earthquake Fault Zones) around the surface traces of active faults and to depict these zones on topographic base maps, typically at a scale of 1 inch to 2,000 feet. Earthquake Fault Zones vary in width, although they are often 0.75 mile wide. Once published, the maps are distributed to the affected cities, counties, and State agencies for their use in planning and controlling new or renewed construction. With the exception of single-family wood frame and steel-frame dwellings that are not part of a larger development (i.e., four units or more), local agencies are required to regulate development within the mapped zones. In general, construction within 50 feet of an active fault zone is prohibited.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (PRC §§ 2690–2699.6), which was passed in 1990, addresses earthquake hazards other than surface fault rupture. These hazards include strong ground shaking,

[4] Society of Vertebrate Paleontology (SVP). 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Website: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines-1.pdf. Accessed February 5, 2024.

earthquake-induced landslides, liquefaction, or other ground failures. Much like the Alquist-Priolo Earthquake Fault Zoning Act discussed above, these seismic hazard zones are mapped by the State Geologist to assist local government in the land use planning process. The Act states, "It is necessary to identify and map seismic hazard zones in order for cities and counties to adequately prepare the safety element of their general plans and to encourage land use management policies and regulations to reduce and mitigate those hazards to protect public health and safety." The Act also states, "Cities and counties shall require, prior to the approval of a project located in a seismic hazard zone, a geotechnical report defining and delineating any seismic hazard."

California Building Code

The State of California provides minimum standards for building design through the California Building Standards Code (California Code of Regulations [CCR], Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls. The California Building Standards Code (CBC) applies to building design and construction in the State and is based on the 2021 International Building Code (IBC) used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). The CBC has been modified for California conditions with more detailed and/or more stringent regulations.

The State earthquake protection law (California Health and Safety Code § 19100, *et seq*.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, and Appendix Chapter A33 regulates grading activities, including drainage and erosion control and construction on unstable soils, such as expansive soils and areas subject to liquefaction.

The CBC is updated every 3 years, and the current 2022 CBC took effect January 1, 2023. The 2022 CBC has been adopted by the County of Contra Costa according to Chapter 74-2 of the Contra Costa County Ordinance Code (Ordinance Code).

Local

Contra Costa County 2045 General Plan

The 2045 General Plan serves as the overall guiding policy document for the County. The following is a list of 2045 General Plan goals and policies most pertinent to the proposed project with respect to geology and soils.

Health and Safety Element

Goal HS-11 Communities and infrastructure that are protected from seismic and geologic hazards, including severe ground shaking, fault rupture, liquefaction, landslides, and unstable slopes.

Policy HS-P11.1 For projects in areas of known or suspected seismic or other geologic hazards, such as Alquist-Priolo Fault Zones, liquefiable soils, landslides, and steep slopes,

require submittal of a geotechnical report and ensure effective mitigation measures are incorporated into the project design.

Policy HS-P11.4 Refer geotechnical and soils reports to the County Geologist for review and approval whenever necessary.

Policy HS-P11.5 Discourage development on slopes exceeding 15 percent, and prohibit development on slopes exceeding 25 percent, to avoid slope instability, extensive grading, and unnecessary land disturbance. Exceptions may be considered for infrastructure projects and development on existing legal lots where no other feasible building sites exist.

Action HS-A12.4 Identify and, as feasible, retrofit critical County-owned buildings and facilities in areas prone to flooding (including sea level rise and emergent flooding), seismic hazards, landslides and debris flows, tsunamis, or wildfires to maximize defensible space and outdoor fireproofing, improve drainage systems, stabilize nearby slopes, and take other actions as appropriate to minimize the hazard.

Conservation, Open Space, and Working Lands Element

Goal COS-10 Archaeological, cultural, and historic resources that are identified and preserved.

Goal COS-12 Protected natural features with high scenic value, such as visual landmarks, major ridges, prominent hillsides, and stands of mature trees.

Policy COS-P10.6 Upon discovery of significant historic or prehistoric archaeological artifacts or fossils during project construction, require ground-disturbing activities to halt within a 50-foot radius of the find until its significance can be determined by a qualified historian, Archaeologist, or Paleontologist and appropriate protection and preservation measures developed.

Policy COS-P10.7 Require significant historic, archaeological, and paleontological resources to be either preserved on-site or adequately documented as a condition of removal.

Policy COS-P10.10 Coordinate with cities and special districts to identify and preserve archaeological, cultural, and historic resources countywide.

Policy COS-P10.11 Partner with other agencies, culturally affiliated tribes, private entities, and nonprofit organizations to establish programs and funding mechanisms to preserve, restore, and enhance cultural, historic, and archaeologic sites.

Policy COS-P12.1 Deny applications for development that would destroy unique and irreplaceable natural features, such as distinctive rock formations.

Action COS-A10.1 Beginning in 2024, then every five years thereafter, review and update the County's Historic Resources Inventory and Archaeological Sensitivity Map in consultation with culturally affiliated tribes to ensure these remain useful tools

for evaluating potential cultural resources impacts and guiding preservation efforts. As part of the 2024 update to the Historic Resources Inventory, create a map of the listed historic resources, and update the map upon each update to the Historic Resources Inventory. Ensure tribal cultural resources identified through these updates remain confidential.

Contra Costa County Ordinance Code

Building and Construction

Chapter 74-2 of the Contra Costa County Ordinance Code (Ordinance Code) adopts the 2022 CBC, with amendments, as the County's Building Code. As such, all new construction within the County is required to adhere to its seismic safety standards. The County Department of Conservation and Development is responsible for the administration and enforcement of the CBC.

3.6.4 - Impacts and Mitigation Measures

Significance Criteria

According to the California Environmental Quality Act (CEQA) Guidelines Appendix G Environmental Checklist, to determine whether impacts to geology and soils are significant environmental effects, the following questions are analyzed and evaluated. Would the project:

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 wastewater disposal systems where sewers are not available for the disposal of wastewater.

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

Approach to Analysis

Impacts related to geology and soils were determined by reviewing information contained in the Geotechnical Exploration Report and Paleontological Records Search, both of which are provided in Appendix E.

As part of the Geotechnical Exploration, ENGEO collected soil samples via two borings at the project site to depths of approximately 51.5 and 75 feet BGS. Additionally, ENGEO measured soil properties related to soil resistance and bearing capacity via five CPTs, which were also performed at 51.5 and 75 BGS at various locations on the project site. ENGEO reviewed the available literature, historic aerial images, and geologic maps (Appendix E).

Additional evaluations of potential geologic and soil impacts at the project site were based on review of available documentation, including the 2045 General Plan. Impacts to paleontological resources were determined by reviewing the Paleontological Records Search prepared for the project site by Consulting Paleontologist, Dr. Kenneth L. Finger (Appendix E).

Impact Evaluation

Earthquakes

Impact GEO-1: **The proposed project could 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.**

Construction

Impacts related to risks associated with seismic-related hazards are limited to operational impacts. No construction impacts would occur.

i) Ground Rupture

According to the Geotechnical Exploration Report and the California Earthquake Hazards Zone Application (EQ Zapp), the project site is not within an established Earthquake Fault Zone (EFZ). The Geotechnical Exploration Report states that the Concord fault zone is approximately 4 miles east of the project site. As the project site is not within an established EFZ, the Geotechnical Exploration Report concludes that the risk of surface rupture at the project site is low. Therefore, impacts would be less than significant.

ii) Strong Seismic Ground Shaking

Potential impacts associated with strong seismic shaking at the project site, including the areas proposed for off-site improvements, include the potential to damage structures or improvements or

result in the injury or loss of human life, which could represent a potentially significant impact. The risk of damage from ground shaking is controlled by using sound engineering judgment and compliance with the latest provisions of the CBC, as a minimum.

The Geotechnical Exploration Report states that, based on the historic seismicity, the proximity of known active faults, and the estimated earthquake probabilities for the Bay Area as a whole, it should be expected that the site will experience strong seismic ground shaking during the lifetime of the proposed project. The ground shaking hazard levels at the project site are similar to those for most of the Bay Area. As shown on the 2045 General Plan Figure HS-17 Earthquake Hazards (see Exhibit 3.6-1), the project site is located in an area with severe earthquake shaking hazard threat.

Compliance with Chapter 74-2 of the Ordinance Code, which requires all construction to conform to the 2022 CBC and implementation of MM GEO-1, the proposed project, including the off-site improvements, would not expose people or structures to substantial adverse effects associated with seismic ground shaking. Therefore, impacts would be less than significant with mitigation incorporated.

iii) Seismic-related Ground Failure

The Geotechnical Exploration Report determined through testing that the soil underlying the project site has a low to negligible liquefaction potential. ENGEO performed a two-dimensional slope analysis to evaluate the seepage, stability, and seismic vulnerability of the proposed detention basin and drainage channel side slopes adjacent to the berm. Based on the analysis, the proposed system meets the minimum acceptable slope stability factors of safety. However, the 2045 General Plan Figure HS-18A, Liquefaction Susceptibility, identifies the project site in an area with high liquefaction susceptibility which could result in potential significant impacts. Adherence to all applicable laws and regulations, such as Chapter 74-2 of the Ordinance Code, and implementation of MM GEO-1 would ensure impacts are less than significant.

iv) Landslides

The project site is generally flat, with minor sloping toward the west and north. In addition, the 2045 General Plan Figure HS-18B, Landslide Hazards, does not identify the project site as having past landslide activity or landslide susceptibility. As such, impacts would be less than significant.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

MM GEO-1 Implement the recommendations Included in the Geotech Exploration Report

All recommendations listed in the Geotechnical Exploration Report, prepared for the proposed project by ENGEO, dated August 13, 2021 and revised August 4, 2023, shall be listed on the construction documents. These recommendations include earthwork recommendations including but are not limited to recommendations related to site clearing, existing fill removal, keyways and slope rebuild, expansive soil treatment, consolidated settlement, over-optimum moisture conditions,

acceptable fill, fill compactions, underground utility backfill, landscape fill, site drainage, landscaping irrigation, and stormwater bioretention areas; foundations recommendations; exterior flatwork recommendations related to sidewalks, steps, and outdoor courtyards; pavement design recommendations such as flexible pavements, rigid pavements, pavement constructions, and cutoff curbs; and recommendations related to construction procedures.

Level of Significance After Mitigation

Less than significant impact with mitigation incorporated.

Soil Erosion or Topsoil Loss

Impact GEO-2:	**The proposed project would not result in substantial soil erosion or the loss of topsoil.**

Construction

Because the proposed project would disturb at least 1 acre of land during construction, it would be required to obtain a Construction General Permit from the California State Water Resources Control Board (State Water Board) consistent with the Contra Costa County's Municipal Regional Permit (MRP) (Order No. R2-2022-0018; NPDES Permit No. CAS612008) and to comply with its conditions and requirements, which are designed to minimize potential erosion issues. Compliance with the County's NPDES permit would ensure that a stormwater control plan is prepared and BMPs are implemented that would prevent sediments and other pollutants from entering the stormwater system. Thus, with adherence to existing regulatory requirements, impacts from project construction on the project site, including the off-site improvements, would not result in substantial soil erosion or loss of topsoil. Therefore, construction-related impacts related to soil erosion and loss of topsoil would be less than significant.

Operation

As discussed in Chapter 2, Project Description, the proposed project would retain the on-site drainage ditch that currently carries stormwater runoff from the Buchanan Field Airport runways, taxiways, and tarmac areas. The proposed site plan would also include two bioretention areas for a combined 21,190 square feet to be used for stormwater treatment and discharge. Additionally, as stated above, the proposed project would implement the County's MRP, which would reduce erosion from the project site during operation. The operational impact of the proposed project would be less than significant.

Level of Significance

Less than significant impact without mitigation.

Unstable Geologic Location

Impact GEO-3:	**The proposed project would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.**

Construction

Impacts related to risks associated with location on an unstable geologic unit or soil are limited to operational impacts. No respective construction impacts would occur.

Operation

As discussed above, the risk of liquefaction and landslides at the project site is considered low to negligible. ENGEO performed a two-dimensional slope analysis to evaluate the seepage, stability, and seismic vulnerability of the proposed detention basin and drainage channel side slopes adjacent to the berm. Based on the analysis, the proposed system meets the stability criteria, which are the minimum acceptable slope stability factors of safety. Furthermore, the 2045 General Plan Figure HS-18B, Landslide Hazards, does not identify the project site as having past landslide activity or landslide susceptibility. Finally, the proposed project would be required to adhere to all applicable laws and regulations, including Chapter 74-2 of the Ordinance Code, which requires all construction to conform to the 2022 CBC. As such, impacts would be less than significant.

Level of Significance

Less than significant impact without mitigation.

Expansive Soil

Impact GEO-4:	**The proposed project could 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.**

Construction

Impacts related to risks associated with location on expansive soil are limited to operational impacts. No respective construction impacts would occur.

Operation

The Geotechnical Exploration Report concluded that the soil at the project site is highly expansive, indicating a Plasticity Index between 28 and 30, which indicates a moderately high expansion potential. Expansive soil shrinks and swells when subjected to fluctuations in moisture content. Such soil movement may cause heaving and cracking of slabs-on-grade, pavements, and structures founded on shallow foundations, resulting in building damage. This could present a potentially significant impact. However, with adherence to all applicable laws and regulations and implementation of MM GEO-1 at the project site and at the off-site improvements, which requires following all the recommendations of the Geotechnical Exploration Report, impacts would be less than significant.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Implement MM GEO-1.

Level of Significance After Mitigation

Less than significant impact with mitigation incorporated.

Wastewater Disposal Systems

Impact GEO-5:	**The proposed project would not 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.**

Construction

Impacts related to soil capability of supporting the use of alternative wastewater disposal systems are limited to operational impacts. No construction impacts would occur.

Operation

The proposed project is located within an urbanized portion of the County. The proposed project would include wastewater infrastructure and connections to the existing sanitary sewer lines located in Sally Ride Drive. Wastewater treatment capacity impacts are discussed further under Section 3.14, Utilities and Service Systems. Thus, there would be no operational impact related to soil capability of supporting the use of alternative wastewater disposal systems.

Level of Significance

No impact.

Destruction of Paleontological Resource or Unique Geologic Feature

Impact GEO-6:	**The proposed project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.**

Construction

The Paleontological Records Search (Appendix E) indicates that there are no fossil localities within the boundary of the project site or the off-site improvements. However, it states that the University of California Museum of Paleontology (UCMP) database lists hundreds of significant paleontological localities in Contra Costa County. Closest to the project site, at more than 1 mile to the southwest, are two Late Pleistocene localities, which yielded an assemblage of 6,930 specimens, including boney fish, amphibians, reptiles, birds, and mammals. Despite the distance between these two localities and the project site, Pleistocene deposits likely underlie the surficial Holocene layer of the project site.

The proposed project site and associated off-site improvements are situated on Holocene alluvium, which is too young to be fossiliferous. Potentially fossiliferous rocks ranging from Miocene to Cretaceous are mapped on the outskirts of the 0.5-mile search area, but it is impossible to tell which extend in the subsurface to the project site. Regardless, they most likely are too deeply buried to be impacted by project-related excavations.

Construction activities associated with the proposed project would include vegetation removal, grading, utility installation, and excavations for foundation and building construction. At the time of this analysis, the maximum depth of excavation is not precisely known; it is unlikely that excavation

during construction of the proposed project would encounter deposits old enough to contain significant paleontological resources.

In the unlikely event that any significant fossils are unearthed during construction activities, impacts could be potentially significant. Implementation of MM GEO-6a, which would require a paleontological resources-related Worker Environmental Awareness Program (WEAP) be provided to all construction personnel, and MM GEO-6b, which outlines action in the event of a discovery, would ensure that unique paleontological resources are protected and impacts would be less than significant.

Operation

The likelihood that paleontological resources would be impacted during operation of the proposed project is low to negligible as impacts to these resources generally occur during the construction phase, when excavation occurs. The impact during operation of the proposed project would be less than significant.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

MM GEO-6a **Pre-construction Worker Environmental Awareness Program for Paleontological Resources**

Prior to the start of construction activities at the project site and at the off-site improvements areas, the applicant will retain a qualified Paleontologist that meets the standards included in the Society of Vertebrate Paleontology (SVP) guidelines. Prior to the start of ground-disturbing activities, a qualified Paleontologist shall develop and conduct a pre-construction Worker Environmental Awareness Program (WEAP). The training shall include information on what types of paleontological resources could be encountered during excavations, what to do in case an unanticipated discovery is made by a worker, and laws protecting paleontological resources. All construction personnel shall be informed of the possibility of encountering fossils and instructed to immediately inform the construction foreman or supervisor if any bones or other potential fossils are unexpectedly unearthed. The applicant shall ensure that construction personnel are made available for and attend the training and retain documentation demonstrating attendance.

MM GEO-6b In the event that fossils or fossil-bearing deposits are discovered during construction at the project site or at the off-site improvements areas, excavations within 50 feet of the find shall be temporarily halted or diverted. The contractor shall notify the qualified Paleontologist to examine the discovery and determine its significance. The qualified Paleontologist shall document the discovery as needed in accordance with Society of Vertebrate Paleontology (SVP) standards, evaluate the potential resource, and assess the significance of the find under the criteria set forth in CEQA Guidelines Section 15064.5. The qualified Paleontologist shall determine procedures that would

be followed before construction is allowed to resume at the location of the find. If, in consultation with the qualified Paleontologist, it is determined that avoidance is not feasible, the qualified Paleontologist shall prepare an excavation plan for mitigating the effect of the proposed project on the qualities that make the resource important. The plan shall be submitted for review and approved by Contra Costa County and the applicant shall implement the approved plan.

The qualified Paleontologist shall have the authority to require construction monitoring if significant paleontological resources are recovered.

Level of Significance After Mitigation

Less than significant impact with mitigation incorporated.

3.6.5 - Cumulative Impacts

The geographic scope of the cumulative analysis related to geology and soils is the project site and its vicinity. Adverse effects associated with geology and soils tend to be localized; therefore, an area generally within a 0.25-mile radius would be the area most affected by activities associated with the proposed project. The analysis considers the foreseeable development projects listed in Table 3-1 and shown in Exhibit 3-1 (See Chapter 3, Environmental Impact Analysis) in unincorporated Contra Costa County and the surrounding cities, in addition to the proposed project.

Seismic-related Hazards

None of the projects listed in Table 3-1 are located within 0.25 mile of the project site or the off-site improvements. Cumulative projects, including the proposed project, have the potential to experience moderate to strong ground shaking from earthquakes. Projects listed in Table 3-1 would be exposed to the same ground shaking hazards and would be subject to the same requirements as the proposed project. Cumulative projects would adhere to the provisions of the CBC, policies of the 2045 General Plan, and the Ordinance Code to reduce potential hazards associated with seismic ground shaking and ground failure. As such, the proposed project, in conjunction with other projects, would not have a cumulatively significant impact associated with seismic-related hazards.

Soil-related Hazards

Soil conditions associated with the project site, such as liquefiable soils, expansive soils, and soil settlement, are specific to the project site and generally do not contribute to a cumulative effect. Some or all other cumulative projects may have similar conditions, but they would not contribute to cumulative soil-related hazards. The proposed project would be subject to the 2045 General Plan policies and the Ordinance Code to reduce soil-related hazards. Other current and future development/redevelopment projects in the region would similarly be required to adhere to standards and practices that include stringent geologic and soil-related hazard mitigations. Projects that would result in more than 1 acre of ground disturbance would also be required to prepare a SWPPP as part of complying with the NPDES Construction Stormwater General Permit, which would reduce the potential for soil erosion and loss of topsoil. The cumulative projects would include appropriate geotechnical engineering, design measures, and BMPs that would reduce any potential

impacts to less than significant levels. As such, the proposed project, in conjunction with other projects, would not have a cumulatively significant impact associated with soil-related hazards.

Paleontological Resources and Unique Geologic Feature

None of the projects listed in Table 3-1 occur within 0.25 mile of the project site. Construction activities associated with development of cumulative projects in the project vicinity may have the potential to encounter undiscovered geologic resources or paleontological resources. These cumulative projects would be required to mitigate for impacts through compliance with applicable federal and State laws governing geologic resources and paleontological resources. The likelihood that geologic resources or paleontological resources are present on the cumulative project sites is relatively low, given that the majority of soil disturbance associated with these projects will take place within Holocene soils too young to be fossiliferous.

Although there is the possibility that previously undiscovered resources could be encountered by subsurface earthwork activities, the implementation of standard construction mitigation measures would ensure that undiscovered geologic resources and paleontological resources are not adversely affected by cumulative project-related construction activities. Given the low potential for disruption and the comprehensiveness of mitigation measures that would apply to the cumulative projects, the proposed project, in conjunction with other planned and approved projects, would result in a less than significant cumulative impact related to paleontological and geologic resources.

Level of Cumulative Significance

Less than significant cumulative impact.

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