

3.5

GEOLOGY

3.5.1 Introduction

3.5.2 Environmental Setting

3.5.3 Applicable Regulations

Geologic Hazards

Geologic resources and geotechnical hazards in the proposed Project vicinity are governed primarily by the City of Los Angeles. The conservation and safety elements of the City of Los Angeles General Plan contain policies for the protection of geologic features and avoidance of geologic hazards (City of Los Angeles 1996a and 2001a). Local grading ordinances establish detailed procedures for excavation and earthwork required during construction in backland areas. In addition, City of Los Angeles building codes and building design standards for the Port establish requirements for construction of aboveground structures (City of Los Angeles 2002e). Most local jurisdictions rely on the [1997-2007 California Uniform-Building Standards Code \(UBC\)](#) as a basis of seismic design. However, with respect to wharf construction, the LAHD standards and specifications would be applied to the design of the proposed Project. The LAHD must also comply with regulations of the Alquist-Priolo Act, which regulates development near active faults to mitigate the hazard of a surface fault rupture.

The MOTEMS were approved by the California Building Standards Commission on January 19, 2005 and are codified as part of California Code of Regulations, Title 24, Part 2, Marine Oil Terminals, Chapter 31F. These standards apply to all existing marine oil terminals in California and include criterion for inspection, structural analysis and design, mooring and berthing, geotechnical considerations, fire, piping, and mechanical and electrical systems. MOTEMS became effective on January 6, 2006 (CSLC 2006). The process of developing the MOTEMS has produced parallel guidelines and recommended provisions. The *Seismic Design Guidelines for Port Structures*, published in 2001 by the Port International Navigation Association (PIANC) uses text virtually identical to that found in the MOTEMS. The language

1 for the PIANC and the MOTEMS is derived from the Naval Facilities Engineering
2 Service Center Technical Report (TR-2103-SHR), *Seismic Criteria for California*
3 *Marine Oil Terminals* (CSLC 2004a).

4 All Port pipelines are designed in accordance with the American Society of
5 Mechanical Engineers/American National Standards Institute B31.4, “*Liquid*
6 *Transportation Systems for Hydrocarbons, Liquid, Petroleum Gas, Anhydrous*
7 *Ammonia, and Alcohols*”. The design, construction, operation, and maintenance of
8 all pipelines would be regulated by the U.S. Department of Transportation (DOT),
9 under Title 49 of the CFR, Chapter I, DOT, Part 195. The integrity of marine oil
10 pipelines is maintained through a preventative maintenance program, in accordance
11 with American Petroleum Institute (API) Standards Applicable to Section 2570, Title
12 2, Division 3, Chapter 1, Article 5.5, of the California Code of Regulations (CSLC
13 2004b).

14 **Mineral Resources**

15 Excavations and pipeline construction in the immediate vicinity of existing oil
16 facilities is regulated in accordance with standards and procedures as set forth by the
17 California Department of Conservation Division of Oil, Gas, and Geothermal
18 Resources (DOGGR). If any structure is to be located over or in proximity to a
19 previously abandoned well, the well may require re-abandonment. Public Resources
20 Code, Section 3208.1, authorizes the State Oil and Gas Supervisor to order re-
21 abandonment of any previously abandoned well when construction of any structure
22 over or in proximity to the well could result in a hazard.

23 SMARA was enacted to promote conservation of the State’s mineral resources and to
24 ensure adequate reclamation of lands once they have been mined. Among other
25 provisions, SMARA requires the State Geologist to classify land in California for
26 mineral resource potential. The four categories include: Mineral Resource Zone
27 (MRZ)-1, areas of no mineral resource significance; MRZ-2, areas of identified
28 mineral resource significance; MRZ-3, areas of undetermined mineral resource
29 significance; and MRZ-4, areas of unknown mineral resource significance.

30 The distinction between these categories is important for land use considerations.
31 The presence of known mineral resources, which are of regional significance and
32 possibly unique to that particular area, could potentially result in non-approval or
33 changes to a given project if it were determined that those mineral resources would
34 no longer be available for extraction and consumptive use. To be considered
35 significant for the purpose of mineral land classification, a mineral deposit, or a
36 group of mineral deposits that can be mined as a unit, must meet marketability and
37 threshold value criteria adopted by the California State Mining and Geology Board.
38 The criteria vary for different minerals depending on the following: (1) whether the
39 minerals are strategic or non-strategic, (2) the uniqueness or rarity of the minerals,
40 and (3) the commodity-type category (metallic minerals, industrial minerals, or
41 construction materials) of the minerals. The State Geologist submits the mineral land
42 classification report to the State Mining and Geology Board, which transmits the
43 information to appropriate local governments that maintain jurisdictional authority in
44 mining, reclamation, and related land use activities. Local governments are required

1 to incorporate the report and maps into their general plans and consider the
2 information when making land use decisions.

3 3.5.4 Impacts and Mitigation Measures

4 3.5.4.3 Project Impacts and Mitigation

5 The assessment of impacts is based on regulatory controls and on the assumptions
6 that the proposed Project would include the following:

- 7 • The Port will design and construct onshore improvements in accordance
8 with Los Angeles Building Code, Sections 91.000 through 91.7016 of the
9 Los Angeles Municipal Code, to minimize impacts associated with
10 seismically induced geohazards. Sections 91.000 through 91.7016 of the
11 Los Angeles Municipal Code regulate construction in onshore areas of the
12 Port. These building codes and criteria provide requirements for
13 construction, grading, excavations, use of fill, and foundation work,
14 including type of materials, design, procedures, etc. These codes are
15 intended to limit the probability of occurrence and the severity of
16 consequences from geological hazards. Necessary permits, plan checks,
17 and inspections are also specified. The Los Angeles Municipal Code also
18 incorporates structural seismic requirements of the [California Building
19 Standards Commission, which provides a minimum standard for building
20 design through the California Building Standards Code. The latter is based
21 on the International Code Council, but has been modified for California
22 conditions. The California Building Standards Code includes, but is not
23 limited to, specific requirements regarding seismic safety; grading
24 activities, including drainage and erosion control; and excavation, retaining
25 walls, and construction to protect people and property from hazards
26 associated with excavation cave-ins and falling debris or construction
27 materials. The Project engineers shall review the Project plans for
28 compliance with the appropriate standards in the building codes.
29 ~~California Uniform Building Code, which classifies almost all of coastal
30 California \(including the Project site\) within Seismic Zone 4, on a scale of
31 1 to 4, with 4 being most sev~~The Project engineers shall review the Project
32 plans for compliance with the appropriate standards in the building codes.](#)
- 33 • The Port will design and construct wharf improvements in accordance with
34 MOTEMS and the LAHD standards, to minimize impacts associated with
35 seismically induced geohazards. Such construction shall include, but not
36 be limited to, completion of site-specific geotechnical investigations
37 regarding construction and foundation engineering. Measures pertaining to
38 temporary construction conditions, such as maximum temporary slope
39 gradient, will be incorporated into the design. A licensed geologist or
40 engineer will monitor construction to verify that construction occurs in
41 concurrence with proposed Project design.

42 For consistency with the Deep Draft FEIS/FEIR, **MM 4A-4** and **MM 4A-6**, which
43 require site-specific geotechnical investigations to reduce geohazard impacts, would
44 apply to the proposed Project and would be implemented as discussed below for
45 **Impact GEO-1** and **Impact GEO-3**.

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