

## 1 4.6 CULTURAL RESOURCES

2 Cultural resources include architectural and structural resources, archaeological  
3 resources, paleontological resources, and human remains. This Section describes the  
4 cultural resources that might be present in the vicinity of the proposed San Francisco  
5 Bay and Delta Sand Mining Project (Project), determines the potential impacts of the  
6 Project on those resources, and recommends mitigation measures that would reduce  
7 impacts to a less-than-significant level.

8 The Project lead agency under the California Environmental Quality Act (CEQA) is the  
9 California State Lands Commission (CSLC). The Applicants are Hanson Marine  
10 Operations (Hanson) and Jerico Products, Inc./Morris Tug & Barge (Jerico).  
11 Implementation of the Project includes permitting from the U.S. Army Corps of  
12 Engineers (ACOE); therefore, the ACOE is required to comply with applicable Federal  
13 environmental laws, including Section 106 of the National Historic Preservation Act  
14 (NHPA), as amended. The Area of Potential Effects (APE) includes all areas of ground-  
15 disturbing activity within the proposed lease area boundaries located in the Central  
16 San Francisco Bay and the Suisun Bay and western Delta. Offloading facilities operate  
17 under their own entitlements, and the Applicants are not proposing any changes to the  
18 offloading facilities. Therefore, operations at offloading facilities, including the transport  
19 of materials to and from these facilities, are not considered part of the Project APE.

### 20 4.6.1 Environmental Setting

#### 21 Cultural Overview

##### 22 *Prehistoric Background*

23 A three-part cultural chronological sequence, the Central California Taxonomic System  
24 (CCTS), was developed by archaeologists to explain local and regional cultural change  
25 in prehistoric central California from approximately 4,500 years ago to the time of  
26 European contact (Beardsley 1948). A framework for the interpretation of the  
27 San Francisco Bay and North Coast Ranges prehistory was also developed by  
28 Fredrickson, who divided human history in California into three broad periods:  
29 Paleoindian, Archaic, and Emergent (Fredrickson 1973). This scheme used  
30 sociopolitical complexity, trade networks, population, and the introduction and variations  
31 of artifact types to differentiate between cultural units. Most recently it has been  
32 suggested that a hybrid system, using a broad temporal sequence (Early-Middle-Late  
33 Period) and a regional cultural sequence (pattern-aspect-phase), has the advantage of  
34 identifying local variations within larger cultural cycles (Milliken et al. 2007).

1 The Paleoindian period (11,000 to 8,000 B.C.) was characterized by small, highly  
2 mobile groups occupying broad geographic areas; however, evidence of these big  
3 game hunters and early gatherers has not yet been discovered in the San Francisco  
4 Bay Area. During the Archaic period, consisting of the Lower Archaic period (8,000 to  
5 3,500 B.C.), Middle Archaic (3,500 to 500 B.C.), Initial Upper Archaic (500 B.C. to  
6 A.D. 430), and Late Upper Archaic (A.D. 430 to 1,050), geographic mobility may have  
7 continued, although groups began to establish longer-term base camps in localities from  
8 which a more diverse range of resources could be exploited. The addition of milling  
9 tools, obsidian, and chert concave-base points, and the occurrence of sites in a wider  
10 range of environments inland and along the coast suggest that the economic base was  
11 more diverse. By the Initial Upper Archaic, mobility was being replaced by a more  
12 sedentary adaptation in the development of numerous small villages, and the  
13 beginnings of a more complex society and economy began to emerge. During the  
14 Emergent Period (A.D. 1050 to 1700), social complexity developed toward the  
15 ethnographic pattern of large, central villages where political leaders resided, with  
16 associated hamlets and specialized activity sites. Artifacts associated with the period  
17 include the bow and arrow, small corner-notched points, mortars and pestles, and a  
18 diversity of beads and ornaments (Milliken et al. 2007).

#### 19 *Ethnographic Background*

20 The APE is located within the ethnographic territory of three distinct Native American  
21 tribes: Coast Miwok, Patwin, and Costanoan, as discussed below.

22 Coast Miwok territory is located in present-day Marin and Sonoma Counties and  
23 includes the Marin Headlands and Angel Island. Settlements focused on bays and  
24 estuaries, or along perennial interior watercourses. Marine foods, including kelp, clams,  
25 crabs, and especially fish, were a year-round staple. Acorns were gathered in season  
26 and stored for use throughout the year. Tobacco was generously used by most men  
27 (Kelly 1978:418).

28 The Patwin were not a unified political group but a collection of tribelets, each consisting  
29 of a primary village and several satellite villages, whose territory centered on the  
30 southern portion of the Sacramento River Valley, from the town of Princeton on the  
31 north to the San Pablo and Suisun Bays on the south (Johnson 1978). Each village was  
32 headed by a hereditary chief. Residence after marriage was matrilineal and the  
33 household was the basic social unit. The Patwin hunted, fished, and gathered, with  
34 salmon, waterfowl, deer and other mammals, seeds, and acorns being important food  
35 sources. Virtually unique to Northern Californian peoples, the Patwin practiced the

1 Kuksu cult system, which featured a number of secret societies into which young men  
2 were initiated (Johnson 1978:353).

3 The San Francisco Peninsula and the southern shoreline of the Suisun Bay and Delta  
4 are within the traditional territory of the Ohlone or Costanoan people (Levy 1978). The  
5 people collectively called the Costanoan by ethnographers were actually distinct  
6 sociopolitical groups who spoke at least eight languages of the same Penutian  
7 language group. The primary sociopolitical unit was the tribelet, or village community,  
8 which was overseen by one or more chiefs. In 1770, the Costanoan-speaking people  
9 lived in approximately 50 tribelets with population estimates ranging from a total of  
10 7,000 (Kroeber 1925) to 10,000 (Levy 1978).

11 By the mid-1800s Spanish missionization, diseases, raids by Mexican slave traders,  
12 and dense immigrant settlement had disrupted all Bay Area Native American culture,  
13 dramatically reducing the population, and displacing the native people from their villages  
14 and land-based resources.

#### 15 *Historic-Period Background*

16 The Spanish first explored Northern California during the latter part of the 18th century.  
17 In 1776, Mission Dolores and a military Presidio were established. The small town of  
18 Yerba Buena (San Francisco) was founded in 1822 and the Bay and Delta were  
19 immediately recognized as an invaluable route into the interior of California. The  
20 discovery of gold in the Sierra Nevada foothills instigated the mass migration of  
21 thousands of gold seekers into California, many of whom passed through San Francisco  
22 and traveled up the Delta and Sacramento River before embarking overland. This  
23 economic focus was relatively short-lived, but supply and support industries were  
24 responsible for the development of both Sacramento and San Francisco.

25 As ships plied their way into the Bay many were abandoned in the San Francisco port.  
26 These ships became the foundation for the artificial expansion of the City into the Bay.  
27 Within the past few decades, numerous ships have been uncovered during construction  
28 projects in the area east of Bush Street toward the Embarcadero. Many other ships  
29 were wrecked while navigating in the Bay, oftentimes due to the numerous rocks that jut  
30 up from the Bay floor. Many of these rocks were removed during the next century. The  
31 Bay and Delta continue to be the most important waterway transportation route in  
32 Northern California.

1 *Cultural Resources Sensitivity Assessment*

2 A records search was conducted at the Northwest Information Center (NWIC) of the  
3 California Historical Resources Information System at Sonoma State University on  
4 March 25, 2009 (File No. 08-1176). Records were accessed by reviewing the Vine Hill,  
5 Benicia, Honker Bay, Antioch North, and San Francisco North 7.5-minute quadrangle  
6 base maps.

7 Additional research was conducted using the files and literature at Environmental  
8 Science Associates (ESA). The records search included a half-mile radius around the  
9 APE in order to: (1) determine whether known cultural resources had been recorded  
10 within or adjacent to the APE; (2) assess the likelihood of unrecorded cultural resources  
11 based on historical references and the distribution of environmental settings of nearby  
12 sites; and (3) develop a context for identification and preliminary evaluation of cultural  
13 resources.

14 Included in the review were the California Inventory of Historical Resources (California  
15 Department of Parks and Recreation [DPR] 1976), California Historical Landmarks (DPR  
16 1990), California Points of Historical Interest, and the Historic Properties Directory Listing  
17 (California Office of Historic Preservation [OHP] 2009). The Historic Properties Directory  
18 includes listings of the National Register of Historic Places (National Register) and the  
19 California Register of Historical Resources (California Register), and the most recent  
20 listing of the California Historical Landmarks and California Points of Historical Interest.  
21 Historic-period maps and the CSLC's California Shipwreck database were also  
22 reviewed.

23 A sacred lands search request and a request for Native American contacts list were  
24 submitted to the Native American Heritage Commission (NAHC) on April 3, 2009.  
25 NAHC's response to ESA's request was received on July 8, 2009. The NAHC  
26 responded that the sacred lands survey did not have records of specific cultural  
27 resources in the APE. Letters were sent to the individuals and organizations provided by  
28 the NAHC on August 3, 2009. No responses have yet been received as of this writing.

29 *Prehistoric Resources*

30 No prehistoric archaeological resources have been documented in the APE and, for the  
31 reasons identified below, there is a low potential for uncovering intact prehistoric  
32 deposits in the APE. The APE in the Central Bay is below relatively deep water (from  
33 30 to 90 feet deep) while in the Delta, the APE is below somewhat shallower water

1 (from 15 to 45 feet deep). Historically, the San Francisco Bay Area was a very different  
2 place. When sea levels were much lower (22,000 to 15,000 years before present [BP]),  
3 the “California River” and other smaller streams and rivers drained through the  
4 “Franciscan Valley” west through the mouth of the Golden Gate channel toward the  
5 Farallon Islands, where the water drained into what was then the shoreline of the Pacific  
6 Ocean (Meyer and Rosenthal 2007). Between 15,000 and 11,000 years BP, sea levels  
7 rose and began to flood the lowest portions of the Franciscan Valley floor and most of  
8 the continental shelf. As the waters continued to rise, freshwater marshes began to form  
9 and sediments began to accumulate on the floor of the Valley.

10 Human use and occupation of the region is believed to have begun circa 11,000 B.C.;  
11 therefore, the Central Bay APE was likely below water at the time humans first arrived in  
12 the area. The Suisun Bay and Delta Project APE may have, at least initially, been  
13 exposed; however, continued tidal flow and sediment deposition have likely hidden or  
14 destroyed evidence of this occupation. Furthermore, sand mining activities occur in  
15 locations of sand shoals. These shoals are constantly shifting and are not conducive  
16 locations for in situ archaeological deposits.

#### 17 *Historic-period Resources*

18 Hundreds of shipwrecks have occurred in the San Francisco Bay, Carquinez Strait, and  
19 Delta over the past 150 years; however, none were positively identified in the records  
20 search as being located within the APE. This does not necessarily mean that the APE  
21 contains no shipwrecks. Shipwreck provenience is somewhat unpredictable because  
22 records were often assembled from historic accounts that did not detail precise  
23 locations. Furthermore, many wrecks were subsequently refloated and repaired or  
24 otherwise salvaged although no historic account of this activity is recorded (Sullivan and  
25 Allan 1996).

26 One maritime archaeological study has been conducted in the APE as part of the  
27 San Francisco Bay Rocks Removal Project (Allan 2001). The study was completed in  
28 the vicinity of CSLC lease areas PRC 709 (North), PRC 2036, and PRC 7779 (West).  
29 One target was identified during remote sensing within the Project APE. Target Arch-2,  
30 an anchor and chain of undetermined age, was located in the vicinity of Arch Rock,  
31 approximately 0.75 mile west of Alcatraz Island. The target was determined not eligible  
32 for the National Register or the California Register. No further consideration was  
33 necessary and no other cultural resources were discovered in this vicinity.

1 Strong tidal or storm currents can cause fairly significant changes in the shape and  
2 location of sand shoals, the target resource of the Project. Sand could potentially bury  
3 any shipwrecks in their vicinity; however, no recorded shipwrecks or submerged cultural  
4 resources are known to exist within the APE. Furthermore, most of the APE has been  
5 mined previously resulting in a heavily disturbed area. In summary, there is a low  
6 potential for impacting these historic-period resources types.

7 *Paleontological Resources*

8 Paleontological resources are the fossilized remains of plants and animals, including  
9 vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites,  
10 and coral marine), and fossils of microscopic plants and animals (microfossils).  
11 Paleontological resources are distinct from archaeological resources in that they record  
12 past plant and animal life, and not human history. Fossil discoveries provide  
13 paleontologists with valuable evidence to help them reconstruct the biological and  
14 geological histories. In order for an organism to be preserved, it must be buried and  
15 mineralized, which requires a specific set of favorable geologic conditions and a  
16 significant amount of time. When fossils are discovered at the earth's surface, it is  
17 because the material in which the organism was fossilized has been eroded away by  
18 natural processes or exhumed by humans.

19 The sedimentary deposits beneath the San Francisco Bay contain several hundred feet  
20 of mud, silt, sand and gravel delivered by California streams and record a history of  
21 fluctuating sea levels. These different environments are also reflected in the fossil  
22 assemblages that occur in the units. The oldest and deepest layers of gravel and sand  
23 are known to contain fossils of extinct non-marine vertebrates; they reflect a time when  
24 sea level was much lower and the Bay was a terrestrial valley. Today, these layers are  
25 at great depths beneath the Bay, but do crop out along some foothills in the Bay Area.  
26 Within overlying bay deposits of mud and silt, the occurrence of invertebrate marine  
27 organisms reflects a rise in sea level that occurred starting about 11,000 years ago.  
28 These fossils have been found within older (deeper) deposits of bay mud and consist of  
29 mollusks, diatoms, and other marine invertebrates. However, surface layers of mud and  
30 silt in the San Francisco Bay cannot have existed long enough or buried organisms  
31 deep enough to produce fossils and thus are not considered fossil-yielding deposits.

32 In places within the San Francisco Bay estuarine system, sand shoals have been  
33 deposited over the bay mud by swift tidal currents. These deposits are the Project  
34 Applicants' target resource, and are derived from sandy rock units and transported into  
35 the bay by local streams and longshore drift along the coast. They are constantly

1 shifting under ebb and flood tides and do not represent stable geologic deposits that  
2 would preserve fossils.

3 The APE cannot be reasonably expected to contain paleontological resources. The  
4 sand shoals targeted for mining are geologically young and unstable. High tidal  
5 velocities and constantly shifting shoals result in a lack of a permanent burial  
6 mechanism that could result in fossil preservation. Fossils occur only in consolidated  
7 rock units that have existed for long enough periods for processes of mineralization and  
8 fossilization to take place. Surface layers of bay mud may also be disturbed by dredging  
9 activities, but even these deposits are not fossil-yielding due to their young age and lack  
10 of burial.

#### 11 **4.6.2 Regulatory Setting**

12 Numerous laws and regulations require Federal, State, and local agencies to consider  
13 the effects the Project may have on cultural resources. These laws and regulations  
14 stipulate a process for compliance, define the responsibilities of the various agencies,  
15 and prescribe the relationship among other involved agencies (e.g., the California State  
16 Office of Historic Preservation (OHP) and the Federal Advisory Council on Historic  
17 Preservation [Advisory Council]).

#### 18 **Federal**

##### 19 *National Historic Preservation Act (NHPA)*

20 Cultural resources are protected through the NHPA of 1966, as amended (16 United  
21 States Code [U.S.C.] § 470f), and its implementing regulations. Prior to implementing an  
22 “undertaking” (e.g., issuing a Federal permit or license), Section 106 of the NHPA  
23 requires Federal agencies to consider the effects of the undertaking on historic  
24 properties and to afford the Advisory Council a reasonable opportunity to comment on  
25 any undertaking that would adversely affect properties listed or eligible for listing in the  
26 National Register. Under the NHPA, a cultural resource is considered significant if it  
27 meets the National Register listing criteria at 36 Code of Federal Regulations (CFR)  
28 60.4, as stated below:

29 The quality of significance in American history, architecture, archaeology,  
30 engineering, and culture is present in districts, sites, buildings, structures, and  
31 objects that possess integrity of location, design, setting, materials, workmanship,  
32 feeling, and association and

- 1 (a) That are associated with events that have made a significant contribution to  
2 the broad patterns of our history, or
- 3 (b) That are associated with the lives of persons significant in our past, or
- 4 (c) That embody the distinctive characteristics of a type, period, or method of  
5 construction, or that represent the work of a master, or that possess high  
6 artistic values, or that represent a significant and distinguishable entity whose  
7 components may lack individual distinction, or
- 8 (d) That have yielded, or may be likely to yield, information important in  
9 prehistory or history.

10 Federal review of projects, referred to as the Section 106 process, is the responsibility  
11 of any Federal agency with direct or indirect jurisdiction over the project. The Section  
12 106 review normally involves a four-step procedure, which is described in detail in the  
13 implementing regulations (36 CFR Part 800):

- 14 • Initiation of the Section 106 process;
- 15 • Identification of historic properties within the APE;
- 16 • Assessment of adverse effects of the undertaking on historic properties; and
- 17 • Resolution of adverse effects through consultation with the OHP and the  
18 Advisory Council or termination of consultation leading to Advisory Council  
19 comments.

#### 20 *Abandoned Shipwreck Act*

21 The Abandoned Shipwreck Act of 1987 (Act; 43 U.S.C. §§ 2101 through 2106) provides  
22 that any abandoned shipwreck embedded in a state's submerged lands, or that is  
23 located on a state's submerged lands and is included in or determined eligible for  
24 inclusion in the National Register, is the property of that state and subject to that state's  
25 jurisdiction. Under California Public Resources Code section 6313(a), abandoned  
26 shipwrecks are under the jurisdiction of the CSLC.

#### 27 **State**

28 The State of California implements the NHPA through its statewide comprehensive  
29 cultural resource surveys and preservation programs. The OHP, as an office of the  
30 DPR, implements the policies of the NHPA on a statewide level. The OHP also  
31 maintains the California Historical Resources Inventory. The State Historic Preservation

1 Officer is an appointed official who implements historic preservation programs within the  
2 State's jurisdictions.

3 *California Environmental Quality Act (CEQA)*

4 Historical and Unique Archaeological Resources. CEQA (Pub. Resources Code, §  
5 21000 et seq.) is the principal statute governing the environmental review of projects in  
6 the State. CEQA requires lead agencies to determine if a proposed project would have  
7 a significant effect on historical resources or "unique archaeological resources."

8 The State CEQA Guidelines define an historical resource as: (1) a resource in the  
9 California Register; (2) a resource included in a local register of historical resources, as  
10 defined in Public Resources Code section 5020.1(k) or identified as significant in an  
11 historical resource survey meeting the requirements of Public Resources Code section  
12 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript  
13 that a lead agency determines to be historically significant or significant in the  
14 architectural, engineering, scientific, economic, agricultural, educational, social, political,  
15 military, or cultural annals of California, provided the lead agency's determination is  
16 supported by substantial evidence in light of the whole record (State CEQA Guidelines,  
17 § 15064.5 subd. (a)).

18 The California Register is an "authoritative listing and guide to be used by State and  
19 local agencies, private groups, and citizens in identifying the existing historical  
20 resources of the State and to indicate which resources deserve to be protected, to the  
21 extent prudent and feasible, from substantial adverse change" (Pub. Resources Code, §  
22 5024.1 subd. (a)). The criteria for eligibility to the California Register are similar to the  
23 National Register criteria (Pub. Resources Code, § 5024.1 subd. (b)). Certain resources  
24 are determined by the statute to be automatically included in the California Register,  
25 including California properties formally eligible for or listed in the National Register.

26 To be eligible for the California Register as an historical resource, a prehistoric or  
27 historic-period resource must be significant at the local, State, and/or Federal level  
28 under one or more of the following criteria:

29 (1) Is associated with events that have made a significant contribution to the broad  
30 patterns of California's history and cultural heritage;

31 (2) Is associated with the lives of persons important in our past;

1 (3) Embodies the distinctive characteristics of a type, period, region, or method of  
2 construction, or represents the work of an important creative individual, or  
3 possesses high artistic values; or,

4 (4) Has yielded, or may be likely to yield, information important in prehistory or  
5 history (Cal. Code Regs., tit. 14, § 4852 subd. (b)).

6 For a resource to be eligible for the California Register, it must also retain enough  
7 integrity to be recognizable as an historical resource and to convey its significance. A  
8 resource that does not retain sufficient integrity to meet the National Register criteria  
9 may still be eligible for listing in the California Register.

10 If a lead agency determines that an archaeological site is an historical resource as  
11 defined above, then the provisions of Public Resources Code section 21084.1 and State  
12 CEQA Guidelines section 15064.5 apply. If an archaeological site does not meet the  
13 State CEQA Guidelines criteria for an historical resource, but does meet the definition of  
14 a “unique archaeological resource” under Public Resources Code section 21083, then  
15 the provisions of that section apply. A “unique archaeological resource” is “an  
16 archaeological artifact, object, or site about which it can be clearly demonstrated that,  
17 without merely adding to the current body of knowledge, there is a high probability that it  
18 meets any of the following criteria:

19 (1) Contains information needed to answer important scientific research questions  
20 and that there is a demonstrable public interest in that information.

21 (2) Has a special and particular quality such as being the oldest of its type or the  
22 best available example of its type.

23 (3) Is directly associated with a scientifically recognized important prehistoric or  
24 historic event or person (Pub. Resources Code, § 21083.2 subd. (g)).

25 State CEQA Guidelines section 15064(c)(4) notes that if a resource is neither a unique  
26 archaeological resource nor an historical resource, the effects of the project on that  
27 resource shall not be considered a significant effect on the environment.

28 Paleontological Resources. Appendix G of the State CEQA Guidelines indicates that a  
29 project would have a significant impact on a paleontological resource if it will directly or  
30 indirectly destroy a unique paleontological resource or site or unique geologic feature.  
31 Section 5097.5 of the Public Resources Code prohibits unauthorized removal or injury  
32 to vertebrate paleontological resources, including fossilized footprints, on public lands.

1 *San Francisco Bay Plan*

2 The San Francisco Bay Plan of the San Francisco Bay Conservation and Development  
3 Commission (BCDC) addresses shoreline cultural and historical resources. However,  
4 no specific provisions address submerged cultural resources, including shipwrecks.

5 **4.6.3 Significance Criteria**

6 Based on Appendix G of the State CEQA Guidelines, Project implementation would  
7 have a potentially significant impact on cultural resources if it would result in any of the  
8 following:

- 9 • A substantial adverse change in the significance of an historical resource as  
10 defined in the State CEQA Guidelines section 15064.5;
- 11 • A substantial adverse change in the significance of a unique archaeological  
12 resource;
- 13 • Disturbance or destruction of a unique paleontological resource or site or unique  
14 geologic feature; or
- 15 • Disturbance of any human remains, including those interred outside of formal  
16 cemeteries.

17 **4.6.4 Impact Analysis and Mitigation**

18 No known cultural resources are located within the mining lease areas. The Project  
19 does not have the potential to cause a substantial adverse change in the significance of  
20 an historical resource or a unique archaeological resource. The Project will not disturb  
21 or destroy known unique paleontological resources. However, the possibility of  
22 encountering cultural resources and human remains cannot be entirely discounted and  
23 the following measures are provided to ensure that, in the event of an inadvertent  
24 discovery, procedures are followed to reduce any impacts to cultural resources to a  
25 less-than-significant level. Table 4.6-1, located at the end of Section 4.6.4, summarizes  
26 cultural resources impacts associated with the proposed Project.

27 **Impact CUL-1: Inadvertent discovery of historical resources or “unique**  
28 **archaeological resources”**

29 **Sand mining activities could potentially result in the inadvertent discovery of**  
30 **archaeological historic-period resources (e.g., shipwrecks) or prehistoric Native**  
31 **American sites (Potentially Significant, Class II).**

1 No historical resources or unique archaeological resources have been recorded in the  
2 APE. The APE has a low potential to contain buried or submerged cultural resources.  
3 However, the possibility cannot be entirely discounted. Project personnel should,  
4 therefore, be alerted to the possibility of encountering cultural materials during Project  
5 implementation, and apprised of the proper procedures to follow in the event that such  
6 materials are found, as described in Mitigation Measure (MM) CUL-1.

7 **MM for Impact CUL-1: Inadvertent discovery of historical resources or “unique**  
8 **archaeological resources”**

9 **MM CUL-1: Cease operations and notify the California State Lands**  
10 **Commission (CSLC) and U.S. Army Corps of Engineers (ACOE).** If an  
11 inadvertent discovery is made of items of historic or prehistoric archaeological  
12 potential, all work activities shall immediately cease in the area of discovery.  
13 Prehistoric archaeological materials might include obsidian and chert flaked-stone  
14 tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally  
15 darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish  
16 remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling  
17 slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-  
18 period materials might include shipwreck remains, including wood, iron, and steel-  
19 hulled ships as well as smaller ferrous materials such as anchors, iron ballast, chain,  
20 iron hull fasteners, rigging, and fittings of various types. The Applicants shall take the  
21 following actions:

- 22 1. After cessation of activity, the contractor shall immediately contact the CSLC  
23 and ACOE. The contractor shall not resume work in the area of the discovery  
24 until authorization is received from the CSLC and the ACOE.
- 25 2. If CSLC staff determines that an historical or archaeological resource may be  
26 present within the project site, the applicants shall retain the services of a  
27 qualified archaeologist who meets the Professional Qualifications Standards  
28 contained in the Secretary of the Interior’s Standards and Guidelines for  
29 Archaeology and Historic Preservation. In the case of a shipwreck or other  
30 maritime resources, a qualified maritime archaeologist shall be retained. The  
31 archaeologist will make an immediate evaluation of the discovery and will  
32 advise CSLC staff whether it is a resource of potential scientific/historical/  
33 cultural significance. The archaeologist will make a recommendation as to  
34 what action, if any, is warranted. Based on this information, CSLC staff may  
35 require, if warranted, specific additional measures to be implemented by the  
36 Applicants no more than 48 hours from receipt of the recommendation.
- 37 3. Measures might include: Preservation in situ of the archaeological resource  
38 (avoidance); archaeological data recovery; salvage and conservation of all or  
39 part of the resource if reasonably feasible (i.e., shipwreck); or further  
40 evaluation. CSLC staff may also require that the Applicants immediately

- 1           implement a site security program if the resource is at risk from vandalism,  
2           looting, or other damaging actions.
- 3           4. Artifacts found on lands under the jurisdiction of the CSLC are considered the  
4           property of the State of California. Any disposition of these artifacts requires  
5           the approval of the CSLC.
- 6           5. The archaeologist shall submit an archaeological resources report to CSLC  
7           staff. This report shall include an evaluation of the historical significance of  
8           any discovered archeological resource, as well as a description of the  
9           archaeological and historical research methods employed.

## 10 **Rationale for Mitigation**

11           MM CUL-1 would minimize impacts if unrecorded historical resources or unique  
12           archaeological resources are encountered by either preserving the site through  
13           avoidance or if avoidance is not reasonably feasible, through data recovery of the  
14           site's scientifically consequential information, thus reducing impacts to a less-than-  
15           significant level.

### 16 **Impact CUL-2: Inadvertent discovery of paleontological resources**

17           **Sand mining activities would not disturb or destroy a unique paleontological**  
18           **resource or site or unique geologic feature (Less than Significant, Class III).**

19           Any ground-disturbing activity has the potential to expose previously unknown  
20           paleontological resources. As discussed above, however, the sand shoals that would be  
21           targeted for sand mining are too young geologically and too unstable to produce fossils.  
22           For these reasons, potential disturbance or damage to paleontological resources or  
23           unique geologic features is considered to be a less-than-significant impact.

24           **Mitigation:** None required.

### 25 **Impact CUL-3: Inadvertent discovery of human remains**

26           **Sand mining activities could potentially result in the discovery of human remains**  
27           **(Potentially Significant, Class II).**

28           The discovery of human remains is an extremely remote possibility within the APE.  
29           However, since the nature of the proposed Project would involve ground-disturbing  
30           activities, it is possible that such actions could unearth, expose, or disturb previously  
31           unknown human remains. Project personnel should be alerted to the possibility of  
32           encountering human remains during Project implementation, and apprised of the proper  
33           procedures to follow in the event they are found.

1 **MM for Impact CUL-3: Inadvertent discovery of human remains**

2 **MM CUL-3: Cease operations and notify County Coroner.** If human remains are  
 3 discovered during sand mining activities, State Health and Safety Code section  
 4 7050.5 requires that no further disturbance shall occur until the County Coroner has  
 5 made the necessary findings as to origin and disposition pursuant to Public  
 6 Resources Code section 5097.98. If the remains are determined to be those of a  
 7 Native American, the coroner has 24 hours to notify the Native American Heritage  
 8 Commission (NAHC). The NAHC will then identify the person(s) thought to be the  
 9 Most Likely Descendent (MLD) of the deceased Native American, who, within 48  
 10 hours, will recommend what course of action should be taken in dealing with the  
 11 remains. The Applicants, MLD, and CSLC staff will make all reasonable efforts to  
 12 develop an agreement for the treatment, with all appropriate dignity, of any human  
 13 remains and items associated with the remains (State CEQA Guidelines section  
 14 15064.5(d).) The agreement would take into consideration the appropriate removal,  
 15 analysis, custodianship, and final disposition of the human remains and items  
 16 associated with the remains. If an agreement cannot be reached, then the  
 17 landowner or authorized representative shall reinter the human remains and  
 18 associated items with appropriate dignity on the property in a location not subject to  
 19 further and future subsurface disturbance. (Pub. Resources Code, § 5097.98, subd.  
 20 (e).)

21 **Rationale for Mitigation**

22 MM CUL-3 would minimize impacts if previously undiscovered human remains are  
 23 encountered by following procedures to determine if the remains are those of a  
 24 Native American and if they are the remains of a Native American, by following a  
 25 process to treat the remains with appropriate dignity. Impacts would be reduced to  
 26 less than significant.

27 **Table 4.6-1. Summary of Cultural Resources Impacts and Mitigation Measures**

Impact	Mitigation Measures
<b>CUL-1:</b> Inadvertent discovery of historical resources or “unique archaeological resources.”	<b>MM CUL-1:</b> Cease operations and notify CSLC and ACOE.
<b>CUL-2:</b> Inadvertent discovery of paleontological resources.	Less than Significant impact; no mitigation necessary.
<b>CUL-3:</b> Inadvertent discovery of human remains.	<b>MM CUL-3:</b> Cease operations and notify County Coroner.

28 **4.6.5 Impacts of Alternatives**

29 Under the No Project Alternative, there would be no potential to disturb unrecorded  
 30 cultural resources. The high degree of sand movement on the bay floor due to natural  
 31 forces would, however, continue to degrade these resources if they are present.  
 32 Clamshell dredge mining would have the same potential impact as the proposed Project

1 with respect to the inadvertent discovery of cultural resources and human remains.  
2 Because mining would occur within the Central Bay and Delta under the other two  
3 alternatives, they would also have the same potential impacts as the proposed Project.

#### 4 **4.6.6 Cumulative Projects Impact Analysis**

5 As discussed in the setting section and in the impacts above, the Project area has a low  
6 potential for occurrence of cultural resources that could be disturbed or destroyed by  
7 mining. With implementation of MMs CUL-1 and CUL-3, impacts related to accidental  
8 discovery of historical and archaeological resources and human remains are reduced to  
9 less than significant. Cumulative projects listed in Table 3-3 in Section 3.0, Alternatives  
10 and Cumulative Projects, might also disturb or destroy unknown cultural resources and  
11 human remains located on the seafloor in the Bay and Delta. The Long-Term  
12 Management Strategy (LTMS) for the Placement of Dredged Material in the San  
13 Francisco Bay, the LTMS for Delta Sediments, the Oakland Harbor Navigation  
14 Improvement (-50 Foot) Project, the Hamilton Wetlands Restoration Project Dredged  
15 Material Aquatic Transfer Facility, the Trans-Bay Cable, the Sacramento River Deep  
16 Water Ship Channel, and the San Francisco Bay to Stockton Navigation Improvement  
17 projects may result in similar impacts, since they all involve disturbance of the seafloor,  
18 and could therefore result in accidental discovery of historical resources or human  
19 remains. However, as previously noted, the potential for occurrence of such resources  
20 in the Project lease areas is small, and the other cumulative projects occur in areas that  
21 are already highly disturbed, are distant from the Project lease areas, or have similarly  
22 low potential for occurrence of cultural resources. Therefore, the potential for a  
23 significant cumulative impact is low.

24