



BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XR059]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Elkhorn Slough Tidal Marsh Restoration Project, Phase II in California

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

SUMMARY: NMFS has received a request from California Department of Fish and Wildlife (CDFW) for authorization to take marine mammals incidental to Elkhorn Slough Tidal Marsh Restoration Project, Phase II in California. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-year renewal that could be issued under certain circumstances and if all requirements are met, as described in *Request for Public Comments* at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than [*insert date 30 days after date of publication in the FEDERAL REGISTER*].

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service. Physical comments should be sent to 1315 East-West Highway, Silver Spring, MD 20910 and electronic comments should be sent to *ITP. Bonnie.DeJoseph@noaa.gov*.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments received electronically, including all attachments, must not exceed a 25-megabyte file size. Attachments to electronic comments will be accepted in Microsoft Word or Excel or Adobe PDF file formats only. All comments received are a part of the public record and will generally be posted online at <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act> without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Bonnie DeJoseph, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce

(as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an incidental harassment authorization) with respect to potential impacts on the human environment. This proposed action is consistent with categories of activities identified in Categorical Exclusion B4 (incidental harassment authorizations with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative

Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On August 14, 2019, NMFS received a request from CDFW for an IHA to take marine mammals incidental to Elkhorn Slough Tidal Marsh Restoration Project, Phase II; e.g., using heavy equipment to restore 58 acres of saltmarsh habitat. The application was deemed adequate and complete on November 4, 2019. California Department of Fish and Wildlife's request is for take of a small number of Pacific harbor seals (*Phoca vitulina richardii*) by Level B harassment only. Neither CDFW nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued an IHA to CDFW for related work (Phase I of the Elkhorn Slough Tidal Marsh Restoration Project; XRIN 0648-XE687). CDFW complied with all the requirements (e.g., mitigation, monitoring, and reporting) of the previous IHA and information regarding their monitoring results may be found in the Estimated Take section.

This proposed IHA would cover one year of a larger project for which CDFW obtained prior IHAs and intends to request take authorization for subsequent facets of the project. The larger project involves restoring 147 acres of vegetated tidal salt marsh, upland ecotone, and native grasslands in Monterey County. CDFW complied with all the requirements (e.g.,

mitigation, monitoring, and reporting) of the previous IHA and information regarding their monitoring results may be found in the Estimated Take section.

Description of Proposed Activity

Overview

In response to years of anthropogenic degradation (e.g., diking and marsh draining), the CADFV seeks to restore 147 acres of vegetated tidal salt marsh, upland ecotone, and native grasslands of Elkhorn Slough (Monterey, California). Phase I of the Elkhorn Slough Tidal Marsh Restoration Project, completed in 2018, restored 61 acres of marsh. Phase II aims to restore 58 acres of saltmarsh habitat by using heavy equipment to relocate soil from an upland area, south of the Minhoto-Hester Restoration Area, within an 11 month work period. Construction activities are expected to produce airborne noise and visual disturbance that have the potential to result in behavioral harassment of Pacific harbor seals (*Phoca vitulina richardii*). NMFS is proposing to authorize take, by Level B Harassment, of Pacific harbor seals as a result of the specified activity.

Over the past 150 years, human activities have altered the tidal, freshwater, and sediment processes, which are essential to support and sustain Elkhorn Slough's estuarine habitats. Fifty percent of the tidal salt marsh in the Slough has been lost during this time period. This habitat loss is primarily a result of two historic land use changes, 1) construction of a harbor at the mouth of the Slough and the related diversion of the Salinas River, which lead to increased tidal flooding (and subsequent drowning of vegetation) and 2) past diking and draining of the marsh for use as pasture land. The act of draining wetlands led to sediment compaction and land subsidence, from one to six feet. Decades later, the dikes began to fail, reintroducing tidal waters to the reclaimed wetlands. Rather than converting back to salt marsh, the areas converted to poor

quality, high elevation intertidal mudflat, as the lowered landscape was inundated too frequently to support tidal marsh, and insufficient sediment supply was available in the tidal waters to rebuild elevation. The loss of riverine sediment inputs, continued subsidence of marsh areas, sea level rise, increased salinity, and increased nutrient inputs may also contribute to marsh loss (Watson *et al.*, 2011). Bank and channel erosion in the Elkhorn Slough are also leading to deepening and widening tidal creeks, causing salt marshes to collapse into the channel, and eroding sediments that provide important habitat and support estuarine food webs.

The proposed project involves using heavy equipment to raise, excavate, and reposition soil from the borrow area to the remnant marsh plain. It would improve marsh sustainability with sea level rise, as the restored marsh would be higher in the tidal frame, further from the drowning threshold, and marsh vegetation in the restored areas would accrete organic material that would help the restored marsh plain rise with sea level. It would also reduce tidal prism in Elkhorn Slough, reducing the potential for ongoing tidal scour and associated marsh loss. The Minhoto-Hester Restoration Area is key to restoring hydrology to the Phase I restoration area and the Seal Bend Restoration Area is important for both habitat restoration and to maintain the configuration of the main channel of Elkhorn Slough as the remnant levee in the area has almost disintegrated.

Dates and Duration

Construction activities are anticipated to begin in January 2020, after all permits are secured, and take 11 months to complete. Some deviation in timing could result from unforeseen events such as weather, logistical issues, or mechanical issues with construction equipment. If a break in construction activities does occur, the construction period will be extended by the length of the break without exceeding the one-year window permitted by this IHA. The construction period assumes that the construction contractors would work between sunrise and sunset,

Monday through Friday. However, some construction activity may also be required during these times on Saturdays. Due to the nature and location of the proposed work schedule, the potential exposure to Pacific harbor seals would be confined to six of the 11 months (180 days).

Specific Geographic Region

The proposed project is located in the Elkhorn Slough estuary, situated 90 miles south of San Francisco and 20 miles north of Monterey, is one of the largest estuaries in CA, and contains the State's largest salt marshes south of San Francisco Bay (see Figure 1. of the application). Specifically, the project sites are located on land owned and operated by CADFW as part of the Elkhorn Slough Ecological and National Estuarine Research Reserves. The waters of the Elkhorn Slough State Marine Reserve and Monterey Bay National Marine Sanctuary run north of Phase II's project sites in Elkhorn Slough's main channel. Two additional Marine Protected Areas are located within approximately one mile of the project site: Elkhorn Slough State Marine Conservation Area and Moro Cojo Slough State Marine Reserve.

The Elkhorn Slough system is a network of intertidal marshes, mudflats, and subtidal channels located at the center of the Monterey Bay shoreline. With an average depth of 4.6 feet, it is the deepest at the SR 1 bridge overcrossing where it measures 25 feet deep at mean lower low water (MLLW). The main channel in Elkhorn Slough becomes narrower and shallower as it winds inland.

Phase II work would occur within two tidal restoration areas: The Minhoto-Hester Restoration Area (subareas M4a-b, M5, and M6) and the Seal Bend Restoration Area (subareas S1-S4) (see Figure 2 from application), 29.3 and 28.6 acres, respectively. Both are low-lying areas consisting of subsided pickleweed marsh, intertidal mudflats, tidal channels, and remnant levees. The Minhoto-Hester Marsh has multiple cross-levees as well as, natural and dredged

channels with a major dredged channel (100+ ft. wide in some locations) that runs north to south through the remnant marsh. Seal Bend has also been divided by multiple cross-levees, and has the heavily eroded remnants of a perimeter levee along its outboard side. A large borrow channel is located adjacent to the interior of the perimeter levee.

Mixed use lands encompass the slough's boundaries; their activities may influence anticipated behavioral responses and ambient noise levels. To the north are hilly uplands and marine terraces that lie between the Pajaro and Salinas valleys. Upland areas drain into Elkhorn Slough through numerous small ephemeral creeks. The largest of these is Carneros Creek at the head of the estuary. Land use in these uplands consists of agriculture (primarily strawberries and other row crops), cattle grazing, rural residences, and the small town of Las Lomas. Wetlands, mudflats, and marsh areas on both sides of Elkhorn Slough characterize the immediate project setting. Located at the mouth of the bay, a marina and kayak rentals accommodate recreational boaters. Recreational vessels are restricted to the main channel of Elkhorn Slough, just outside the project area. To the south of Elkhorn Slough is an industrial park that comprises a natural gas powered electricity plant and a chemical plant. Southeast of Seal Bend is a dairy farm and further east, south of Yampah Marsh, is a vehicle dismantling and recycling yard. The Union Specific Railroad (UPRR) traverses the reserve, north to south, east of the main channel.

Detailed Description of Specific Activity

Phase II plans to restore 58-acres of saltmarsh habitat, including 53-acres of subsided marsh within the Minhoto-Hester Restoration Area (sub-areas M4a-b, M5, and M6) and the Seal Bend Restoration Area (subareas S1-S4); 2 acres of tidal channels and an additional 3 acres of intertidal salt marsh created at an upland borrow area. To restore hydrologic function to the project area they propose raising the subsided marsh plain, maintaining or re-excavating the

existing tidal channels, and excavating within the upland buffer area to restore marsh plain, ecotone, and native grassland habitat.

Up to 276,000 cubic yards (CY) of soil will be obtained from an upland borrow area, south of the Minhoto-Hester Restoration Area (see Figure 2 from the application), to raise the marsh plain elevations to allow emergent wetland vegetation to naturally reestablish and persevere. Sediment would be placed to a fill elevation slightly higher than the target marsh plain elevation permitting settlement and consolidation of the underlying soils. The average fill depth would be 2.1 feet, including 25 percent overfill.

Table 1 (same as Table 1 from the application) below presents the acreages and extents of proposed fill within each marsh sub-area, as well as the volume of fill required for each marsh sub-area to be restored. The upland borrow area, onsite, would be used as the fill source. The project would rely primarily on natural vegetation recruitment in the restored marsh areas.

**TABLE 1
VOLUME OF FILL REQUIRED IN EACH SUB-AREA**

Subarea	Area (acres)	Fill Area (acres)	Estimated Fill Volume (CY)
Minhoto-Hester Restoration Area			
Sub-area M4a	2.5	1.0	46,880
Sub-area M4b	9.7	7.3	44,516
Sub-area M5	10.2	7.8	57,466
Sub-area H6	6.8	5.5	33,792
Seal Bend Restoration Area			
Sub-area S1	4.8	4.5	32,982
Sub-area S2	8.6	6.4	36,827
Sub-area S3	4.1	3.0	19,021
Sub-area S4	11.1	8.8	44,516
Total Phase II	57.7	44.5	276,000

Source: ESA 2014a

¹ Volumes are mid-range estimates; actual volumes may be higher or lower.

Water Control and Tidal Channels of the Restoration Area

Work areas on the remnant marsh plain would for the most part be isolated from the tides and dewatered to allow work in non-tidal conditions. Water control structures such as temporary berms, constructed without the use of pile driving, would be utilized to isolate the fill placement area during the construction period; note, that while we refer to the work broadly as “construction,” no permanent installation of structures is included. Existing berms would be used, where possible, and tidal channels in this area will be blocked. The isolated work areas would be drained using a combination of gravity and pumps. Water levels within the blocked areas would be managed to keep them mostly free of water (with some ponded areas remaining) and to allow fill placement at all stages of the tides. To reduce the potential for fish to become entrained in isolated ponded areas, blocking of tidal channels would occur at low tide. When sediment placement is completed, the berms would be lowered to the target marsh elevation, reintroducing tidal inundation.

Remnant historic channels onsite would generally be left in place or filled and re-excavated in the same place. As needed for marsh access, smaller channels would be filled. Avoidance of channel fill, temporary and permanent, is preferred. As much of the existing tidal channel network would be maintained as is feasible, and the post-project channel alignments would be similar to those under existing conditions. The density of channels (length of channel per acre of marsh) after restoration would be comparable to the density in natural reference marshes. Low levees (less than 0.5 feet above the marsh plain) composed of fill material would be constructed along the larger channels to simulate natural channel levees. Fill would be placed as close to the edge of the channel as possible to simulate the form and function of a natural channel bank. Borrow ditches that date from the times of historical wetland reclamation in these

areas would be blocked or filled completely if fill is available after raising the marsh plain. Blocking borrow ditches would route more flow through the natural channels and slightly increase hydraulic resistance, which may achieve benefits from reducing tidal prism and associated scour in the Elkhorn Slough system.

To limit trip distances onto the marsh, the project would employ one or more of the following placement approaches. Temporary channel crossings may be constructed, or tidal channels may be temporarily filled and then re-dug with an excavator or backhoe. If re-excavation of the smaller channels proves infeasible, these channels may be permanently filled, the resulting channel extent consisting of the larger channels only. The resulting channel extent would be sufficient to provide drainage and tidal exchange to support natural marsh functions. The number and locations of channel crossings would depend on the tradeoff between haul distances and the ease of installing and removing the crossings. Where tidal channels were maintained in place, turbidity control measures (i.e., Best Management Practices [BMPs]), such as hay bales or weed free straw wattles) could be staked down in or adjacent to the channels to be preserved. Bulldozers would push fill up to the hay bales and wattles, but not into the channels. Channel crossings and BMPs would be removed at project completion.

Buffer Area

The buffer area would be graded to create an ecotone band along the edge of the restored marsh and/or native grassland habitat (see Figure 2. of the application). Specifically, about three acres of the buffer area would be graded to create intertidal salt marsh and five acres would be revegetated with native dominated perennial grassland adjacent to subareas M4 and M5. The native grassland areas would be revegetated by reducing the weed seed bank and planting native grasses/forbs. A weed-resistant border of rhizomatous perennial plants that readily spreads (e.g.,

creeping wild rye [*Elymus triticoides*] or Santa Barbara sedge [*Carex barbarae*]) would be planted between the grassland and ecotone. Remaining scraped areas within the borrow area would be planted in a cover crop until local material is propagated to expand grassland restoration.

Construction Sequencing and Equipment

Construction sequencing would begin with water management and/or turbidity control measures constructed around the work areas prior to placing material on the marsh. After fill placement on the marsh, any temporary features, such as water management berms would be removed. Construction equipment would include haul trucks, heavy earthmoving equipment, such as dozers, backhoes, loaders, and excavators to transport dry material out onto the marsh. All heavy equipment used to transport dry material out onto the marsh would be of low ground pressure to prevent sinking in the mud. Mats would be temporarily placed on the marsh, as needed, to spread the weight of the equipment. At the end of construction in each cell/stage, any elevated haul roads and/or berms constructed to aid in material placement would be excavated to design grades, with the resulting earth used to fill adjacent restoration areas.

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see *Proposed Mitigation* and *Proposed Monitoring and Reporting*).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about

these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (<https://www.fisheries.noaa.gov/find-species>).

Table 2 lists all species with expected potential for occurrence in Elkhorn Slough and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2016). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Marine Mammal SARs: 2015 (Carretta *et al.*). All values presented in Table 2 are the most recent available at the time of publication and are available in the 2018 SARs (Carretta *et al.*, 2018) and draft 2019 SARs (available online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports>).

Table 2—Harbor Seal Status Information

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance (CV, N _{min} , most recent abundance survey) ²	PBR	Annual M/SI ³
Family Phocidae (earless seals)						
Pacific Harbor Seal	<i>Phoca vitulina richardii</i>	California	-;N	30,968 seals (CV=0.157,Nmin=27,348, 2012)	1,641	43
<p>1 - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.</p> <p>2- NMFS marine mammal stock assessment reports online at: www.nmfs.noaa.gov/pr/sars/. CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable.</p> <p>3 - These values, found in NMFS’s SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.</p> <p><i>NOTE - Italicized species are not expected to be taken or proposed for authorization</i></p>						

As described below, the Pacific harbor seal temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have proposed authorizing it.

In addition, the Southern sea otter (*Enhydra lutris nereis*) may be found in Elkhorn Slough. However, the Southern sea otter is managed by the U.S. Fish and Wildlife Service and are not considered further in this document.

Local Abundance and Habitat Use

Pacific harbor seals use Elkhorn Slough for hauling out, resting, socializing, foraging, molting, and reproduction, but mainly use it as a staging area for foraging in the Monterey Bay, as there is a limited amount of foraging in the Slough (McCarthy 2010). They are central place foragers, tend to exhibit strong site fidelity within-season and across years, generally forage close to haul-out sites, and may repeatedly visit specific foraging areas (Grigg *et al.*, 2012). Harbor seals inhabit Elkhorn Slough year-round and occur individually or in groups, but their abundance may change seasonally depending on prey availability, molting and reproduction

(McCarthy 2010). Molting takes place each summer after pupping, when harbor seals haul out more frequently and for longer periods, than in autumn or winter (Stewart and Yochem 1994).

Counts of harbor seals in the greater Elkhorn Slough began in 1975 and at that time averaged about 30 seals (Harvey *et al.*, 1995, Oxman 1995). The population in the greater Elkhorn Slough is currently estimated at 300 to 500 seals (McCarthy 2010). Harbor seal count data as reported were collected from a variety of sources using various methodologies. Data on harbor seal use near the project area is derived from marine mammal monitoring data collected by the Reserve Otter Monitoring Project (Elkhorn Slough National Estuarine Research Reserve 2018) and Phase I construction monitoring (Fountain *et al.*, 2019).

Harbor seals have utilized the Elkhorn Slough as a resting site since the 1970s, but the first births were not recorded until 1991 (Maldini *et al.*, 2010). From 1995 to 1997, there was a significant annual increase in pups, from 14 seals in 1995 to 29 seals in 1997 (Richman, 1997). The increase of the Elkhorn Slough population and pupping frequency is attributed to a combination of three major factors: overall increase in abundance leading to increased competition for space and population expansion, migration of young seals to the area, and decreased harassment by humans. Furthermore, marine mammal experts speculate the increase was due to removal of public restrooms from the Seal Bend area in the early 1990s (McCarthy 2010). Pupping can occur throughout the year, but generally starts in late March and peaks in May. Some seals may depart during pupping/breeding season to other breeding areas outside of Elkhorn Slough. Females tend to remove themselves from the group to give birth and return within a week (McCarthy 2010). In 2010, 50 pups were observed in Elkhorn Slough (J. Harvey unpublished data in McCarthy, 2010), but the specific location within the Slough was not

documented and the applicant indicates that they have not documented births within the project area.

Seal Haul Outs Potentially Impacted by Project Activities

Harbor seals prefer areas with full tidal exchange; McCarthy (2010) reports them frequenting areas just beyond the mouth of Elkhorn Slough in the Moss Landing harbor and in the Salinas River channel south of the Moss Landing bridge, and the lower portion of Elkhorn Slough extending up to Parsons Slough and Rubis Creek. Figure 3 from the application, depicts known and potential haul-out areas used by harbor seals proximate to the project area. They typically use the corridor from the mouth of Elkhorn Slough through the Moss Landing Harbor entrance for nightly feeding in Monterey Bay (J. Harvey, pers. comm. in McCarthy, 2010). In a diet study conducted between 1995 and 1997, 35 species including topsmelt, white croaker, spotted cusk-eel, night smelt, bocaccio, Pacific herring, a brachyuran crustacean, and 4 genera of mollusks were consumed by harbor seals (Harvey *et al.*, 1995, McCarthy 2010).

For Phase II restoration activities, the “Seal Bend” observation area is most representative of seal use at the Seal Bend restoration area; the “Hester 2” observation area is most representative of seal use at the Minhoto-Hester restoration area. Other monitoring locations that may support seals that transit or haul out near the proposed Phase II restoration areas and that could be disturbed by construction activities include “Wildlife”, “Moon Glow”, “Upper Dairy (also referred to as “Main Channel””, “Yampah”, and “Avila”. Excluding the haul-outs in the project area during construction would temporarily remove less than 2% of the potential haul-out areas in the slough (i.e., based on similar tidal range).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. The *Estimated Take by Incidental Harassment* section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The *Negligible Impact Analysis and Determination* section considers the content of this section, the *Estimated Take by Incidental Harassment* section, and the *Proposed Mitigation* section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

Harbor seals that use the haul-out sites Seal Bend and Hester 2, within and near the footprint of the construction areas (as described in the previous section, Description of Marine Mammals in the Area of Specified Activities) may potentially experience behavioral disruption rising to the level of harassment from construction activities. This may include visual disturbance due to the presence and activity of heavy equipment, construction workers, and biological monitors, as well as airborne noise from the equipment. Disturbed seals are likely to experience any or all of these stimuli, and take may occur due to any of these in isolation or in combination with the others.

Construction activities have the potential to cause behavioral harassment to seals that may be hauling out, resting, foraging, or engaging in other activities either inside or near the project area. Human disturbance of harbor seals can strongly affect their abundance and distribution in estuaries. Some or all of the seals present would be expected to move or flush in response to the presence of crew and equipment, though some may remain hauled out. Individuals or groups of seals can experience levels of behavioral disturbance along a continuum

of responses: 1) lifting the head and/or sitting up (alert), 2) movement, or 3) retreating to the water (flushing). The level of human disturbance to seals is dependent on various factors, such as how the site is used by seals, proximity of disturbance (Allen *et al.*, 1984, Osborn 1985, Suryan and Harvey 1999), and duration and frequency of disturbances (Osborn 1985). The impacts of temporary or permanent site abandonment (flight) due to disturbance can include changes in haul-out pattern, which can also affect feeding patterns, and, potentially, reduce pup survival from mother/pup separation and interrupted suckling bouts if disturbance were to occur in longer durations in the vicinity of mother-pup pairs. Tolerance to disturbance may be lower during pupping season (Osborn 1985).

Anthropogenic Airborne Sound Levels

Because of the various activities within and surrounding Elkhorn Slough, as discussed in the *Specific Geographic Region* Section above, resident seals may already be habituated to noise from these established human activities. Noise levels were monitored during a restoration project at Parson's Slough, adjacent to Minhoto-Hester Marsh, in 2010 and 2011. Background noise during that project was approximately 57dBC L_{\max} (dB can be defined as dB with C-weighting which is a standard weighting of the audible frequencies commonly used for the measurement of Peak Sound Pressure Level [SPL] and L_{\max} is defined as the maximum sound level during a single noise event) as measured at 20 and 40 meters northeast of the pile installation site and approximately 1.5 meters above the ground (ESNERR 2011). Approximately 15 to 20 trains pass along the UPRR each day, which is located within 400 feet of the eastern-most portion of the project site (Vinnedge Environmental Consulting 2010). Noise levels from trains were monitored during construction of the Parson's Slough Project and estimated at 108 dBC L_{\max} . Noise is also generated from Pick-n-Pull, a vehicle dismantling yard and recycling yard, located

approximately 300 feet from the project site. Lastly, agricultural equipment operated within the existing uplands and haul trucks that travel regularly across adjacent agricultural lands and along nearby levees, also contribute to the ambient noise of Elkhorn Slough.

Although no specific measurements have been made at the project area, it is reasonable to believe that levels may generally be similar to the previous project at Parson’s Slough as there is a similar type and degree of activity within the same type of environment (tidal salt marsh). Known sound levels and frequency ranges associated with anthropogenic sources similar to those associated to this project are summarized in Table 3.

Table 3—Representative Airborne Sound Levels of Anthropogenic Sources – dB re: 20µPa.

Sound source	Airborne sound level	Reference
Heavy Earth Moving Equipment (i.e. excavators, backhoes, and front loaders)	80 - 90 dB at 15.24 m	FHWA, 2015
UPPR trains	108 dBC Lmax at 20m and 40 m (northeast of the pile installation)	ESNERR, 2011 (Parson’s Slough)

Airborne noise associated with this project includes noise from construction activities during the restoration of the tidal marsh. Airborne noise produced from earth moving equipment (i.e. backhoes, front end loaders) for construction, may produce sound levels at 80 to 90 dB at 15.24 m (FHWA, 2015) (Table 3). The construction activity may generate noise above ambient levels or create a visual disturbance for a period of 11 months; however, the exact distance of disturbance from noise is unknown. Trains along the UPRR likely generate fairly high noise levels in the eastern portion of the project area, so earth moving equipment operated in this area may not elevate ambient noise levels when trains are present.

Anthropogenic airborne sound could cause hauled out pinnipeds to exhibit changes in their normal behavior, such as reduction in vocalizations, or cause them to move further from the

source or temporarily abandon their habitat. Studies by Blackwell *et al.*, (2004) and Moulton *et al.*, (2005) indicate a tolerance or lack of response to unweighted airborne sounds as high as 112 dB peak and 96 dB root mean square (rms).

Due to the nature of the activities, it is unlikely that injurious or lethal takes would occur even in the absence of the planned mitigation and monitoring measures. Further, the proposed mitigation and monitoring measures are expected to minimize the possibility of take by Level A harassment, such that it is not addressed further. During the 9-month construction window associated with Phase I construction, marine mammal monitoring was required and implemented on 89 days (976 hours of monitoring). During this period, there were 19 observed incidents of Level B harassment of harbor seals (flushing or movement) that were recorded by the monitors. Of these, 16 incidents, representing harassment of 62 individual seals, were attributed to construction activity or marine mammal monitoring; the remaining three incidents were unrelated to the project (e.g., seals flushing as a result of a passing boat in Elkhorn Slough) (Table 3 in the application). When Level B harassment occurred, it was always when seals were within 300 meters of the disturbance source; most were when distances were 100 meters or less (Fountain *et. al.* 2019). In addition, not all seals located in the vicinity of the disturbance flushed or moved during each discrete incident; for example, in nine incidents, less than one third of the seals present in the area flushed. Relative to the average number of seals observed per day during monitoring, approximately 2% were disturbed by construction or monitoring activities. Seals that move or flush are expected to use other areas of the slough available as haul out sites.

Changes to Habitat

The primary potential impact to marine mammal habitat associated with the construction activity is the exclusion from the accustomed haul out areas. During the restoration, the inability

of seals to use suitable habitat within the footprint of the construction area would temporarily remove less than 2% of the potential haul out areas in Elkhorn Slough. Although the proposed action would permanently alter habitat within the footprint of the construction area, harbor seals haul out in many locations throughout the estuary, and the proposed activities are not expected to have any habitat-related effects that could cause significant or long-term consequences for individual harbor seals or their population. The restoration of the marsh habitat will have no adverse long-term effect on marine mammal habitat, but possibly a long-term beneficial effect on harbor seals by improving ecological function of the slough, inclusive of higher species diversity, increased species abundance, larger fish, and improved habitat.

Harbor seals that use the eastern portion of the Minhoto-Hester Restoration Area (up to 50 seals) would be inhibited from hauling-out or resting within the project area during the 11-month construction period. The site would be isolated outside of the peak-pupping season to avoid impacts to mothers with pups. Non-breeding seals that would have utilized the project area for hauling-out or resting would be displaced. However, seals could use other areas of Elkhorn Slough for resting and haul-out during construction, which would minimize impacts to seals.

Conversion of mudflat back to tidal marsh will have an overall beneficial effect on the Elkhorn Slough system and possibly increase habitat for harbor seals. Harbor seals use a small portion of the channel edges within the subsided marsh (now mudflat). By raising the elevation of the marsh, and increasing the extent of tidal marsh, tidal prism would be reduced and possibly increase the extent of haul-out habitat (McCarthy 2010). This reduction would slow erosion and sediment and marsh loss within the slough system. It is expected to reduce the loss of soft sediment habitat within the slough that support prey species of marine mammals.

Increasing the extent of tidal marsh would also improve water quality by establishing a buffer to absorb upland contaminants and agricultural runoff coming from the Old Salinas River mouth. Improved water quality could increase prey abundance and decrease toxin concentrations in seal tissues resulting in a positive effect on harbor seal abundance and distribution (McCarthy 2010).

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to the stressor/s – pedestrian traffic, biological monitors, construction workers, and use of heavy machinery. Based on the nature of the activity, Level A harassment is neither anticipated nor proposed to be authorized.

As described previously, no mortality is anticipated or proposed to be authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water or air that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (e.g., previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimate.

Acoustic Thresholds

Using the best available science, NMFS has developed acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment). Thresholds have also been developed identifying the received level of in-air sound above which exposed pinnipeds would likely be behaviorally harassed.

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (e.g., frequency, predictability, duty cycle), the environment (e.g., bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Ellison *et al.*, 2012, Southall *et al.*, 2007). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a

generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 microPascal (μPa), (rms) for continuous (*e.g.*, vibratory pile-driving, drilling) and above 160 dB re 1 μPa (rms) for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources. For in-air sounds, NMFS predicts that harbor seals exposed above received levels of 90 dB re 20 μPa (rms) will be behaviorally harassed, and other pinnipeds will be harassed when exposed above 100 dB re 20 μPa (rms).

CDFW's Elkhorn Slough Tidal Marsh Restoration Project, Phase II includes the use of intermittent (construction activities) airborne noise and visual disturbances, and therefore the 90 dB re 20 μPa (rms) is applicable. We note, however, that the take estimates (described in detail below) are based on occurrence in the general area, rather than within any specific isopleth.

As indicated above, no Level A harassment is anticipated.

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Data on harbor seal use near the project area is derived from marine mammal monitoring data collected by the Reserve Otter Monitoring Project (ESNERR 2018) and Phase I construction monitoring (Fountain *et al.*, 2019).

The Reserve Otter Monitoring Project has been monitoring otter movement and behavior in Elkhorn Slough since 2011. This effort has been a collaboration between ESNERR, Monterey Bay Aquarium, United State Geologic Survey and University of California Santa Cruz. In January of 2018, they added seals to their observations, and have compiled monitoring data for

seals through April 2019. During this time period, biologists conducted weekly monitoring at nine locations along Elkhorn Slough and five locations in Moss Landing Harbor (Figure 4. in the application). Seal and otter counts were completed every Tuesday, every half hour on the hour and half hour, from 10am-12pm. Eight teams were positioned concurrently throughout the estuary using high-powered binoculars and scopes to see otters and seals. Data collected included weather, observation time, tide, the number and species of marine mammal sighted, and the location they were observed. All monitoring was completed by or under the supervision of a qualified biologist previously approved by USFWS and NOAA Fisheries for marine mammal monitoring.

Figure 5 (from the application) and Table 4 below, summarizes the maximum number of seals observed by location on a single day of monitoring, June 19, 2018. In addition, the maximum and average number of seals observed during an hourly count at each of the seven monitored locations proximate to the Phase II restoration areas over the 16-month observation period (i.e., January 2018 to April 2019) are presented in Table 4. Since the maximum and average seal counts were collected from various days between January 2018 and April 2019, duplicate counts (i.e., recording the same seal more than once), are considered highly probable. These data are consistent with previous

Table 4—Harbor Seal Counts by Reserve Otter Monitoring Project

Location ¹	Highest Daily Count ²	Hourly Counts ³	
		Maximum	Average
Wildlife	88	106	41
Seal Bend	59	86	24
Moonglow	56	87	16

Hester	0	33	5
Main Channel	0	100	30
Yampah	93	81	18
Avila	1	122	32
Total	417	615	166

¹ See Figure 4 (from application) for location of observation area. “Harbor” includes incidental counts outside of formal observation areas.

² Represents highest count of seals recorded on a single day, June 19, 2018, during hourly counts.

³ Represents maximum and average number of seals observed during an hourly count at any location from monitoring dates between January 2018 and April 2019 by Reserve Otter Monitoring Project.

population estimates by McCarthy (2010), which estimated the population of seals in Elkhorn Slough at 300 to 500, with seasonal variability based on prey availability, molting and reproduction. The data also illustrate that seals tend to move between areas proximate to each other. For example, when large numbers of seals were observed in Parsons Slough (“Avila”) in the summer of 2018, there was a comparable decline in the number of seals observed at Seal Bend (Figure 5, in the application).

During Phase I construction, marine mammal monitoring was required and implemented on 89 days (976 hours of monitoring) within the 9-month construction window. An average of 75 seals were recorded by marine mammal monitors in the observation area at any given time, and up to 257 individual seals were observed near the Phase I restoration area in a given day. Nineteen incidents of Level B harassment of harbor seals (flushing or movement) were recorded by the monitors. Of these, 16 incidents, representing harassment of 62 individual seals, were attributed to construction activity or marine mammal monitoring; the remaining 3 incidents were unrelated to the project (e.g., seals flushing as a result of a passing boat in

Elkhorn Slough) (Table 5). When Level B harassment occurred, it was always when seals were within 300 meters of the disturbance source; most were when distances were 100 meters or less (Fountain *et al.*, 2019). In addition, not all seals located in the vicinity of the disturbance flushed or moved during each discrete incident; for example, in 9 incidents, less than one third of the seals present in the area flushed. Relative to the average number of seals observed per day during monitoring, approximately 2% were disturbed by construction or monitoring activities.

Table 5—Phase I Harbor Seal Disturbance Data – Number of Seals Experiencing Level B Harassment (Movement, Flushing) in Relation To Number of Seals Present

Incident	Number Seals Taken	Number Seals in Vicinity	Number Seals in Entire Observation Area
1	12	16	17
2	10	49	75
3	2	2	3
4	1	1	8
5	2	12	31
6	2	12	16
7	2	12	16
8	1	12	16
9	3	3	3
10	4	7	8
11	2	5	36
12	6	43	107
13	2	17	26
14	6	14	31
15	3	3	54
16	4	6	6
Total	62	214	453

Notes: (1) “number seals taken” = seals that moved or flushed.

(2) “Number seals in vicinity” =o those proximate to the disturbance site.

Specific to the presence of pups during Phase I, Table 6 depicts the maximum number of pups observed during hourly counts by month. This metric conservatively represents the highest number of pups that could be disturbed by project-related activities (including by monitoring

Table 6— Maximum number of pups observed during hourly counts by month during Phase I construction

Month	No. of Pups
2017	
December	5
2018	
January	6
February	9
March	4
April	7
May	15
June	5
July	9
August	9

observers) at a given time. Table 7 summarizes all occasions where monitors observed seal pups reacting to Phase I project-related activities— typically sound. All responses were observed within 100m of project-related activities. This metric conservatively represents the highest number of pups that could be disturbed by project-related activities, either a monitor or construction activities (typically sound), at a given time.

Table 7—Phase I Harbor Seal Pup Disturbance Data

Date	Reaction	Trigger	Total No. Seals Present	Total No. Seals Reacted ¹	No. Pups Reacted
4/11/18	Flush	Monitor (Visual)	18	6	3
4/11/18	Flush	Construction (Sound)	12	2	1
4/11/18	Flush	Construction (Sound)	10	2	1
4/11/18	Flush	Construction (Sound)	10	2	1
4/12/18	Alert	Construction (Sound and Visual)	17	2	1

5/01/18	Flush	Monitor (Visual)	3	3	1
¹ Includes all seals (adults, pups) that reacted to project-related disturbance.					

No takes by Level A harassment, serious injury, or mortality are expected from the disturbance associated with the construction activities. It is unlikely a stampede (a potentially dangerous occurrence in which large numbers of animals succumb to mass panic and rush away from a stimulus) would occur or abandonment of pups. The primary spots used for nursing and resting for mother/pup pairs has been the entrance to Parson Slough, which is ~610 m east of Minhoto-Hester restoration area and will not be affected by construction activities (*per comm* Harvey 2019). Pacific harbor seals have been hauling out in the project area and within the greater Elkhorn Slough throughout the year for many years (including during pupping season and while females are pregnant) while being exposed to anthropogenic sound sources such as recreational vessel traffic, UPPR, and other stimuli from human presence. The number of harbor seals disturbed would likely also fluctuate depending on time day and tidal stage. Fewer harbor seals will be present in the early morning and approaching evening hours as seals leave the haul out site to feed and they are also not present when the tide is high and the haul out is inundated.

Take Calculation and Estimates

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

Incidental take is calculated using the estimated number of seals that will be present in project area during construction activities and the anticipated percentage of those seals that will be taken based on previous monitoring. Expected marine mammal presence is determined by past observations – from Phase I of the restoration project and 16 months of data from the Reserve Otter Monitoring Project – and general abundance during the construction window.

Daily take estimates are based on the average percentage of Level B disturbance observed during Phase 1 construction (percent of seals taken) in the following equation:

$$\text{Average Percentage of Seals Taken} = \frac{\text{Total Number Of Seals Taken in Phase I}}{\text{Sum of the Average Number of Seals Observed in Phase I}}$$

The percentage was then rounded up to 2% and used to calculate the daily take estimate. Upon review of CDFW’s take calculation and estimate, NMFS decided to calculate the daily take estimate using the maximum number of seals observed in a day (417) at the seven locations, proximate to the Phase II restoration areas, over a 16-month period by the Reserve Otter Monitoring Project:

$$\text{Daily Take Estimate} = \text{Average \% of Seals Taken} * \text{Maximum Seals Observed in a Day}$$

The proposed authorized take was determined by multiplying the daily take estimate (8.34) by the number of construction days (180), for Phase II of the restoration project. Using this approach, a summary of estimated takes of harbor seals incidental the project activities are provided in Table 8. Estimates include Level B harassment as a result of exposure to noise and visual disturbance during construction activities.

Table 8—Calculated Take and Percentage of Stock Exposed

Species	Proposed Authorized Take		% population ⁴
	Level B	Level A	
A. Pacific Harbor Seal	417 ¹ max seals/day(2% ²)(180 days ³)= 1502	N/A	5%
1. Maximum number of seals observed/day between January 2018 and April 2019 by Reserve Otter Monitoring Project 2. % Take from Phase I 3. Number of construction days 4. Data from U.S. Pacific Marine Mammal Stock Assessments: 2015 (Carretta <i>et al.</i> , 2015)			

All estimates proposed by the applicant and accepted by NMFS, are considered conservative. Construction activities will occur in sections, and some sections (e.g. S1-S4) are further away from seal haul outs (approximately 100 m and greater). Noise from construction

activities in more southern sections may cause fewer disturbances to seals. Not all seals that previously used the haul outs within the footprint of the construction will use the haul outs just outside the project. Some seals may seek alternative haul out habitat in other parts of Elkhorn Slough.

Proposed Mitigation

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) the manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) the practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The following mitigation measures are planned in the IHA:

Timing Restrictions

All work will be conducted during daylight hours when visual monitoring of marine mammals can be implemented. If poor environmental conditions restrict full visibility of the shutdown zone, construction activities would be delayed. No in-water work will be conducted at night.

Shutdown Zone for in-water Heavy Machinery Work

For in-water, heavy machinery work, if a marine mammal comes within 10 m of such operations, operations shall cease and vessels shall reduce speed to the minimum level required to maintain steerage and safe working conditions.

Construction Activities

A NOAA Fisheries and USFWS-approved biologist shall conduct mandatory biological resources awareness training for construction personnel. The awareness training shall be provided to all construction personnel to brief them on the need to avoid effects on marine mammals. If new construction personnel are added to the project, the contractor shall ensure that the personnel receive the mandatory training before starting work.

A NOAA Fisheries and USFWS approved biological monitor will monitor for marine mammal disturbance. Monitoring will occur at all times when work is occurring, 1) in water or 2); within 100 m of tidal waters. Biological monitoring will begin 0.5-hour before work begins

and will continue until 0.5-hour after work is completed each day. The biological monitor will have the authority to stop project activities if marine mammals approach or enter the exclusion zone and/or at any time for the safety of any marine mammals. Work will commence only with approval of the biological monitor to ensure that no marine mammals are present in the exclusion zone.

To reduce the risk of potentially startling marine mammals with a sudden intensive sound, the construction contractor would begin construction activities gradually each day by moving around the project area and starting tractor one at a time.

Fuel storage and all fueling and equipment maintenance activities will be conducted at least 100 feet from subtidal and intertidal habitat.

Pupping Season

While CADFW expects the majority of pupping to take place at Parson's Slough, outside of the project area, pupping location is left to the mother's preference. Thus, in the event a pup comes within 20 m of where heavy machinery is operating, construction activities in that area will be delayed until the pup has left the area. In the event that a pup remains within those 20 m, NMFS will be consulted to determine the appropriate course of action.

If a pup less than one week old comes within 20 meters of where heavy machinery is working, construction activities in that area would be delayed until the pup has left the area. In the event that a pup less than one week old remains within those 20 meters, NOAA Fisheries would be consulted to determine the appropriate course of action.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has preliminarily determined that the proposed mitigation measures provide the means effecting the least practicable impact on the affected species or

stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas).
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors.

- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks.
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat).
- Mitigation and monitoring effectiveness.

Pre-Activity Monitoring

Pre and post construction daily censuses - A census of marine mammals in the project area and the area surrounding the project will be conducted 30 minutes prior to the beginning of construction on monitoring days, and again 30 minutes after the completion of construction activities. The following data will be collected:

- Environmental conditions (weather condition, tidal conditions, visibility, cloud cover, air temperature and wind speed), recorded during pre- and post-construction daily census counts
- Numbers of each species spotted
- Location of each species spotted
- Status (in water or hauled out)
- Behavior

Hourly counts - Conduct hourly counts of animals hauled out and in the water.

Data collected will include:

- Numbers of each species
- Location, including zone and whether hauled out or in the water
- Time
- Tidal conditions

- Primary construction activities occurring during the past hour
- Number of mom/pup pairs and neonates observed
- Notable behaviors, including foraging, grooming, resting, aggression, mating activity, and others
- Tag color and tag location (and tag number if possible)—for sea otters, note right or left flipper and location between digits (digits 1 and 2 are inside; digits 4 and 5 are outside)

Notes may include any of the following information to the extent it is feasible to record:

- Age-class
- Sex
- Unusual activity or signs of stress
- Any other information worth noting

Construction related reactions

Record reaction observed in relation to construction activities including:

- Time of reaction
- Concurrent construction activity
- Location of animal during initial reaction and distance from the noted disturbance.
- Activity before and after disturbance
- Status (in water or hauled out) before and after disturbance

Table 9--Code reactions

Level	Type of response	Definition
1	Alert	Seal head orientation or brief movement in response to disturbance, which may include turning head towards the disturbance, craning head and neck while holding the body rigid in a u-shaped position, changing from a lying to a sitting position, or brief movement of less than twice the animal's body length. Alerts will be recorded,

		but not counted as a 'take'.
2	Movement	Movements away from the source of disturbance, ranging from short withdrawals at least twice the animal's body length to longer retreats, or if already moving a change of direction of greater than 90 degrees. These movements will be recorded and counted as a 'take'.
3	Flush	All retreats (flushes) to the water. Flushing into the water will be recorded and counted as a 'take'.

Steps for shutting down and resuming construction

1. Alert construction foreman of animal using the red flag and handheld radio (use 1 blow from air horn if needed)
2. Record the construction activity and the time of shutdown
3. Record the reaction and location of the animal
4. Give clearance signal (green flag) and handheld radio for construction activities when animal is seen outside of 10-meter zone and traveling away from the construction area, or when the animal is not spotted for 15 minutes
5. Record the time construction resumes

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as

effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

Construction activities associated with this project have the potential to disturb or displace marine mammals. No serious injury or mortality is expected, and with mitigation we expect to avoid any potential for Level A harassment as a result of the Seal Bend and Minhoto-Hester Marsh construction activities. The specified activities may result in take, in the form of Level B harassment (behavioral disturbance) only, from visual disturbance and/or noise from construction activities. The project area is within a portion of the local habitat for harbor seals of the greater Elkhorn Slough and seals are present year-round. Behavioral disturbances that could result from anthropogenic sound or visual disturbance associated with these activities are expected to affect only a small amount of the total population (*i.e.*, likely maximum of 250 seals), although those effects could be recurring over the life of the project if the same individuals remain in the project vicinity. Harbor seals may avoid the area or halt any behaviors (*e.g.*, resting) when exposed to anthropogenic noise or visual disturbance. Due to the abundance of suitable haul out habitat available in the greater Elkhorn Slough, the short-term displacement of resting harbor seals is not expected to affect the overall fitness of any individual animal.

Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions

such as displacement from the area or disturbance during resting. The construction activities analyzed here are similar to, or less impactful than for Parson's Slough (and other projects), which have taken place with no reported injuries or mortality to marine mammals, and no known long-term adverse consequences from behavioral harassment. Repeated exposures of individuals to levels of noise or visual disturbance at these levels, though they may cause Level B harassment, are unlikely to result in hearing impairment or to significantly disrupt foraging behavior. Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (i.e., 24 hour cycle). Behavioral reactions (such as disruption of critical life functions, displacement, or avoidance of important habitat) are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall *et al.*, 2007). However, Pacific harbor seals have been hauling out at Elkhorn Slough during the year for many years (including during pupping season and while females are pregnant) while being exposed to anthropogenic sound and visual sources such as vessel traffic, UPRR trains, and human voices from kayaking. Harbor seals have repeatedly hauled out to rest (inside and outside the project area) or pup (outside of the project area) despite these potential stressors. The activities are not expected to result in the alteration of reproductive or feeding behaviors. It is not likely that neonates will be in the project area as females prefer to keep their pups along the main channel of Elkhorn Slough, which is outside the area expected to be impacted by project activities. Seals are primarily foraging outside of Elkhorn Slough and at night in Monterey Bay, outside the project area, and during times when construction activities are not occurring.

Pacific harbor seals, as the potentially affected marine mammal species under NMFS jurisdiction in the action area, are not listed as threatened or endangered under the ESA and NMFS SARs for this stock have shown that the population is increasing and is considered stable

(Carretta *et al.*, 2016). Even repeated Level B harassment of some small subset of the overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus will not result in any adverse impact to the stock as a whole. The restoration of the marsh habitat will have no adverse effect on marine mammal habitat, but possibly a long-term beneficial effect on harbor seals by improving ecological function of the slough, inclusive of higher species diversity, increased species abundance, larger fish, and improved habitat.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized.
- No Level A harassment is anticipated or authorized.
- Anticipated incidents of Level B harassment consist of, at worst, temporary modifications in behavior.
- Primary foraging and reproductive habitat are outside of the project area and the construction activities are not expected to result in the alteration of habitat important to these behaviors or substantially impact the behaviors themselves. There is alternative haul out habitat just outside the footprint of the construction area, along the main channel of Elkhorn Slough, and in Parson's Slough, preferred in recent years for pupping (*per comm* Harvey 2019), that will be available for seals while some of the haul outs are inaccessible.
- Restoration of the marsh habitat will have no adverse effect on marine mammal habitat, but possibly a long-term beneficial effect.

- Presumed efficacy of the mitigation measures in reducing the effects of the specified activity to the level of least practicable impact
- These stocks are not listed under the ESA or considered depleted under the MMPA. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activities will have only short-term effects on a relatively small portion of the entire California stock (five percent). The specified activities are not expected to impact rates of recruitment or survival and will therefore not result in population-level impacts.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

Here, the authorized take (if we conservatively assumed that each take occurred to a new animal, which is unlikely) comprises approximately five percent of the abundance of harbor

seals. Therefore, based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has preliminarily determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

No incidental take of ESA-listed species is proposed for authorization or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to CDFW for conducting Phase II of the Elkhorn Slough Tidal Marsh Restoration Project in Elkhorn Slough located in Monterey County, CA over 11 months, provided the previously

mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>.

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this Notice of Proposed IHA for the proposed [action]. We also request at this time comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent Renewal.

On a case-by-case basis, NMFS may issue a one-year IHA renewal with an additional 15 days for public comments when (1) another year of identical or nearly identical activities as described in the Specified Activities section of this notice is planned or (2) the activities as described in the Specified Activities section of this notice would not be completed by the time the IHA expires and a Renewal would allow for completion of the activities beyond that described in the Dates and Duration section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to expiration of the current IHA.
- The request for renewal must include the following:
 - (1) An explanation that the activities to be conducted under the requested Renewal are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (e.g., reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of

reducing the type or amount of take because only a subset of the initially analyzed activities remain to be completed under the Renewal).

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

- Upon review of the request for Renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: December 23, 2019.

Donna S. Wieting,
Director,
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National Marine Fisheries Service.

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