11 September 2019

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by U.S. Army Corps of Engineers, Portland District (USACE) seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act to take small numbers of marine mammals by harassment. The taking would be incidental to replacing dike markers in the Columbia River. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 27 August 2019 notice (84 Fed. Reg. 44866) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

USACE plans to replace king pile markers at numerous dike sites in the Columbia River[1]. Operators would install up to 68 24-in steel piles using a vibratory and/or impact[2] hammer. Piles could be driven at up to nine dike sites on a given day. USACE expects activities to occur on up to 61 days, weather permitting, in October and November 2019. It would limit pile-driving and -removal activities to daylight hours only.

NMFS preliminarily has determined that, at most, the proposed activities could cause Level B harassment of small numbers of three marine mammal species. NMFS anticipates that any impact on the affected species and stocks would be negligible. NMFS also does not anticipate any take of marine mammals by death or serious injury and believes that the potential for disturbance will be at the least practicable level because of the proposed mitigation measures. The proposed mitigation, monitoring, and reporting measures include—

- using a bubble curtain during impact pile driving and implementing measures to ensure performance standards are met for the bubble curtain;
- ceasing heavy machinery activities if any marine mammal comes within 10 m of the equipment;
- using standard soft-start, delay, and shut-down procedures;

[1] From river mile 41 to 137.
[2] Impact pile driving can occur only in November to reduce impacts to numerous fish species.

- using one qualified protected species observer at each dike site to monitor the Level A and B harassment zones for 30 minutes before, during, and for 30 minutes after the proposed activities;
- using delay and shut-down procedures, if a species for which authorization has not been granted or if a species for which authorization has been granted but the authorized number of takes has been met[3], approaches or is observed within the Level B harassment zone;
- reporting injured and dead marine mammals to NMFS's Office of Protected Resources and the West Coast Regional Stranding Coordinator using NMFS's phased approach and suspending activities, if appropriate; and
- submitting draft and final marine mammal[4] monitoring reports.

Take estimates

The Commission informally noted that the number of Level B harassment takes were vastly underestimated and Level A harassment takes were lacking altogether for harbor seals. NMFS indicated in the *Federal Register* notice that pinnipeds are typically concentrated at haul-out sites (e.g., the South Jetty) and feeding areas where salmon are concentrated (e.g., Bonneville Dam) and individual animals that occur near dike sites are likely transiting between those two sites (84 Fed. Reg. 44879). The Commission agrees those generalizations are accurate for Steller sea lions and California sea lions, but not for harbor seals. Based on its presumption that harbor seals transit between the South Jetty[5] and Bonneville Dam, NMFS multiplied the maximum number of individuals observed on a given day at Bonneville Dam (three seals; Tidwell et al. 2019) by 61 days of activities. That method vastly underestimated the numbers of seals that could be taken during USACE's activities based on both the number of seals that could be affected at a given time and the frequency at which animals could be affected.

Tidwell et al. (2019) noted that harbor seals only occasionally occur at Bonneville Dam and none have been observed in fall or winter[6]. As such, NMFS based the maximum number of harbor seals observed at Bonneville Dam on counts made during spring surveys, which similarly were low and ranged from 0 to 3 seals. Given that harbor seals haul out and forage in the Columbia River year-round and NMFS indicated that harbor seals were uncommon near the Bonneville dam in all seasons, use of data from Bonneville Dam was inappropriate. In a recent authorization for Port of Kalama, NMFS acknowledged that seals are not transiting to Bonneville Dam similar to sea lions and may spend more time in the project vicinity (83 Fed. Reg. 35224). As such, NMFS authorized Port of Kalama to take 10 harbor seals per day during pile-driving activities that resulted in Level B harassment zones comparable to those of USACE and within USACE's project area (83 Fed. Reg.

[3]NMFS indicated that USACE is aware that it must keep a running tally of takes. The Commission notes that the running tally must also include extrapolation to the areas unable to be monitored.
[4] The Commission informally noted that NMFS included in the preamble the requirements for USACE to provide the marine mammal observational datasheets and to estimate the total take of each species based on the proportion of the Level B harassment zone that is able to be observed, but NMFS did not include those requirements in section 6(a) of the draft authorization. NMFS indicated that it will include both requirements in the final authorization.
[5] See the Commission's 21 August 2019 letter regarding USACE's activities at Sand Island noting that harbor seal takes were underestimated for that action as well and seals are more prevalent at Desdemona Sands and Chinook/Baker Bay than the South Jetty.
[6] Similar to Stansell et al. (2013).

35224). Although those takes were based on anecdotal information[7], the numbers of takes were more than three times what NMFS has proposed for USACE.

Jeffries et al. (2000) has indicated that seals haul-out at a minimum of eight haul-out sites within USACE's project area[8]. Specifically, seals haul out at the Three Tree Point area (two haul-out sites with 100–500 animals each), northeast of Welch Island (< 100 animals), Wallace Island/Eureka Bar (two haul-out sites with < 100 animals each), East Puget Island (100–500), and Cowlitz River/Carroll Slough (one haul-out site with 100–500 animals and one site with < 100 animals). NMFS made no mention of any of these haul-out sites within USACE's project area, only mentioning in the *Federal Register* notice that the Tongue Point haul-out site, with more than 500 seals, is 40 km downstream of USACE's project area (84 Fed. Reg. 44870). Assuming 800 seals[9] would occur in USACE's project area[10], the harbor seal density[11] would be 4.84 seals/km^2. The Level B harassment zone is 5.4 km, thus 10 harbor takes could very well be an underestimate and 3 harbor seal takes clearly is.

Another issue is that NMFS used the number of days of activities rather than the number of piles to be driven to estimate the numbers of takes. Generally speaking, the total numbers of takes are based on the number of takes on a given day multiplied by the number of days of activities. However, in this case, NMFS specified in the *Federal Register* notice that USACE could drive one pile per day or up to nine piles *at nine different locations* on a given day (84 Fed. Reg. 44869). NMFS further indicated that there would be no overlap of Level B harassment zones at adjacent king pile installation sites (84 Fed. Reg. 44879). The Commission additionally notes that USACE will not be able to track individual animals transiting from one site to the other to determine whether the same animals are being taken multiple times. As such, for USACE's activities, NMFS should have used the total number of piles to be driven rather than the number of days that the activities could occur to inform its take estimates.

For Level A harassment, NMFS would require USACE to implement shut-down measures should a harbor seal approach or enter the 60-m shut-down zone[12]. The Commission informally noted that that it would be prudent for NMFS to include Level A harassment takes of harbor seals to account for those animals that could surface within the Level A harassment zone before impact pile driving can cease and suggested 1 Level A harassment take for each of the piles to be driven. This approach is consistent with the Commission's informal and formal recommendations for

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[7] That noted seals foraging at the Cowlitz and Kalama Rivers and the presence of some year-round resident seals.
[8] Aerial surveys were not conducted east of the Cowlitz River/Carroll Slough region.
[9] Based on the lower end of the haul-out count ranges from Jeffries et al. (2000) and the mean haul-out correction factor of 1.5 for the coastal stock (i.e., Grays Harbor, Tillamook Bay, and Umpqua River) from Huber et al. (2001; Table 3).
[10] Based on 155 km between river markers 41 and 137 and a river width of 1.6 km, which equates to an area of 248 km^2. A point to note, Jeffries et al. (2000) conducted haul-out counts in approximately 30 of the 155 km of USACE project area.
[11] USACE is unsure which dike markers would need to be replaced—thus, their proximity to known haul-out sites is unknown. Due to the uncertainty in the pile-driving locations, use of a density is more appropriate in this case than a haul-out count, which is routinely used for estimating takes for other pile-driving activities.
[12] The Level A harassment zone was estimated to be 56.9 m during impact pile driving, which is based on NMFS's presumed 7-dB reduction in source levels when bubble curtains are used. This issue is discussed further herein.

numerous other recent authorizations[13]. For the City of Alameda's activities[14], NMFS stated that it is possible a harbor seal could pop up in the Level A harassment zone without being detected and before a PSO could communicate a shut down to the contractor (84 Fed. Reg. 49552). Therefore, NMFS authorized 1 take by Level A harassment of harbor seals per day during the 6 days of impact pile driving for a total of 6 Level A harassment takes of harbor seals (84 Fed. Reg. 49552). Moreover, for Port of Kalama's activities, NMFS indicated that it would authorize Level A harassment takes of harbor seals to account for the potential that they may be unseen or linger longer than expected in the zone[15]. The Commission has been steadfast that Level A harassment takes should be authorized if there is the potential for taking and to ensure that action proponents do not violate their authorizations should an animal occur within the Level A harassment zone before activities cease. For previous authorizations, NMFS has routinely authorized Level A harassment takes for pile-driving activities and for the specific situations that the Commission has described. Thus, it is unclear why such taking was not proposed to be authorized in this instance.

Based on all of these issues, NMFS informally indicated that it does not plan to authorize Level A harassment takes of harbor seals but would authorize 10 Level B harassment takes of harbor seals on each of the 61 days of activities so that USACE is not in a position where take may be exceeded and construction delays could occur. The Commission concurs with NMFS's stance that the numbers of takes should be sufficient such that action proponents are not delaying their activities[16] and more importantly not violating their authorizations. However, the Commission believes that NMFS's revised number of Level B harassment takes is still insufficient and Level A harassment takes are lacking altogether.

In addition to underestimating takes of harbor seals, NMFS vastly overestimated the number of Level B harassment takes of Steller sea lions. NMFS estimated that 168 Steller sea lion takes would occur on each of the 61 days of activities (84 Fed. Reg. 44880). NMFS based that estimate on the assumption that a maximum of 56 Steller sea lions were observed on a single day in fall/winter at one of Bonneville Dam's tailraces[17] (Tidwell et al. 2019) and that they forage consistently at all three tailraces (84 Fed. Reg. 44880). Those assumptions imply that 168 Steller sea lions are transiting the area and replacing those animals foraging at Bonneville Dam at a 1:1 ratio daily. The Commission is not convinced that 168 individual Steller sea lions occur at Bonneville Dam in fall/winter, let alone are replenished daily. Tidwell et al. (2019) indicated that the average daily count of both Steller and California sea lions at Bonneville Dam ranged from 2.4 to 26.6 animals in the months of October and November[18]. In response to the Commission's concern, NMFS informally indicated that it would reduce the number of Steller sea lion takes from 168 to 56 takes per day. NMFS indicated that the revised Level B harassment takes also are likely an overestimate, but that it would prefer to take a conservative approach. The Commission agrees that a conservative approach

[13] See the Commission's 1 August 2019 letter regarding the City of Alameda as one example.
[14] The Level A harassment zone for harbor seals was 28.5 m for the City of Alameda's activities, which is half the size of the zone for USACE's activities.
[15] The Commission notes that the preamble and Table 3 of the *Federal Register* notice for the final issuance indicated that 10 Level A harassment takes of harbor seals were to be authorized (83 Fed. Reg. 56308-9). However, the final authorization did not ultimately include those Level A harassment takes (https://www.fisheries.noaa.gov/webdam/download/83537057).
[16] By having to shut down activities should an animal occur within a respective harassment zone.
[17] Only one tailrace is monitored in fall/winter and only when 20 or more sea lions are present.
[18] From 2011–2017.

should be taken but that approach should be taken consistently for all species and all types of taking. Steller sea lions are the most commonly observed species at the dam but harbor seals are the most numerous and frequently observed species present in the Columbia River and within USACE's action area. NMFS authorized more than four times the number of Level B harassment takes of harbor seals than either Steller or California sea lions for the Port of Kalama's activities[19] (83 Fed. Reg. 56309), and a similar ratio in the authorized numbers of takes should have been proposed for USACE's activities. The proposed numbers of takes must be based on the biology and ecology of the affected species. For all of these reasons, the Commission recommends that NMFS authorize 52 Level B harassment takes[20] and 1 Level A harassment take of harbor seals and 27 Level B harassment takes of Steller sea lions[21] for each of the 68 piles to be driven[22]. If NMFS follows the Commission's recommendation, it also should revise the number of California sea lion takes[23] based on 68 piles to be driven[24] rather than 61 days of activities. If NMFS chooses to authorize 56 Level B harassment takes of Steller sea lions *per day*, the Commission recommends that, at a minimum, NMFS authorize the same number of Level B harassment takes of harbor seals as Steller sea lions and include 1 Level A harassment take per day of harbor seals.

The Commission has noted on-going issues regarding appropriateness of pinniped take estimates for multiple recent authorizations involving activities in the Columbia River. The Commission understands that USACE plans to conduct additional activities in the near future. As such, NMFS should consult with the biologists at Washington Department of Fish and Wildlife (WDFW) and Oregon Department of Fish and Wildlife (ODFW) to obtain more recent aerial survey data for the various Columbia River haul-out sites than those from Jeffries et al. (2000). Surveys were flown by WDFW and ODFW in 2014 and 2015 based on Jeffries et al. (2015). The Commission recommends that NMFS obtain more recent pinniped haul-out count data from WDFW and ODFW before processing any additional authorizations for activities occurring in the Columbia River.

The Commission appreciates the amount of work involved in NMFS processing an authorization application and supports efforts to find efficiencies in that process[25]. However, given the issues identified for this and other proposed authorizations, the Commission is concerned that the quality of the authorizations is diminishing in the face of expeditiousness. Therefore, the Commission again recommends that NMFS conduct a more thorough review of the applications and *Federal Register* notices to ensure accuracy, completeness, and consistency and to ensure that they are based on best available science, prior to submitting them to the *Federal Register* for public comment. Given that the Commission noted herein that Level A harassment takes were omitted

[19] That occurred during fall and winter and in the same area as USACE's activities.
[20] Based on a density of 4.84 seals/km^2 and an ensonified area of 10.8 km^2. The ensonified area incorporated the 5.4 km Level B harassment zone and an assumed river width of 1 km, recognizing that some portions of the river may be wider and others narrower.
[21] Based on the maximum average daily count at Bonneville Dam in October or November.
[22] Equating to 3,536 Level B harassment takes and 68 Level A harassment takes of harbor seals and 1,836 Level B harassment takes of Steller sea lions.
[23] Currently, NMFS proposed to authorize 9 Level B harassment takes of California sea lions on each of 61 days of activities.
[24] Equating to 612 Level B harassment takes of California sea lions.
[25] Which includes authorizing a sufficient number of takes to ensure that an action proponent need not delay or otherwise be unable to complete its activities *or* need not request a modification to an existing authorization or a subsequent authorization.

erroneously in Port of Kalama's final incidental harassment authorization and NMFS recently requested comments on a modification to a letter of authorization issued to Hilcorp Alaska LLC based on errors in a mitigation measure, it is imperative that any final authorization be reviewed for accuracy and completeness and consistency with the information stipulated in the *Federal Register* notice for final issuance. The Commission recommends that NMFS conduct a more thorough review of final incidental harassment authorizations and letters of authorization to ensure accuracy and completeness and consistency with the information stipulated in the *Federal Register* notice for final issuance.

Bubble curtain efficacy

The Commission previously commented on the assumptions used by NMFS regarding the efficacy of bubble curtains[26]. In the past year, NMFS has adopted a standard 7-dB source level reduction when bubble curtains are to be used during impact pile driving. Variability in attenuation levels results from differences in device design and site and environmental conditions and from difficulties in properly installing and operating sound attenuation devices—the last of which could be alleviated with NMFS's proposed requirement for USACE to implement various bubble curtain performance standards. However, the main reason bubble curtains do not achieve consistent reductions in sound levels is because they cannot attenuate ground-borne sound, which is sound that resonates through the ground into the far field.

Bubble curtains originally were used to minimize both lethal and sub-lethal effects on fish in the near field caused by peak sound pressure levels (SPL). Bubble curtains that are placed immediately around the pile, as proposed for USACE's activities, are intended to minimize those near-field, lethal effects. California Department of Transportation (Caltrans) determined that effectiveness of the bubble curtain varied with direction and distance from the pile and under different tidal conditions (Caltrans 2005). In general, the bubble curtain provided the greatest reduction in SPLs in the near field[27]. At distances of 400–500 m, SPLs were reduced by only 1 to 2 dB. Although a flood tide may have had some effect on the performance of the bubble curtain, the SPL reductions were still only 5 to 10 dB at distances of 45–120 m. This finding confirms that, at greater distances, more of the sound emitted during impact pile driving resonates from the ground than through the water column[28]. Bubble curtains are not designed to, nor can they, attenuate ground-borne sound—this is the reason European wind developers place bubble curtains in the far field at 100 m or more from the pile to minimize far-field effects on marine mammals. Furthermore, Caltrans (2015) stated that, because of the uncertainties associated with the degree of attenuation that would be provided by a bubble curtain, an assumed source level reduction should be limited to 5 dB, which is based on the near-field impacts on fish not marine mammals. Given that Caltrans is the only entity in the United States that has determined efficacy of bubble curtains and has itself repeatedly noted the uncertainties and variability associated with them, NMFS should consult with Caltrans regarding the appropriateness and applicability of Caltrans' data for informing presumed

[26] Please review the Commission's 1 August 2019 letter, 14 May 2019 letter, and 21 May 2018 letter in conjunction with this letter.
[27] In general, the majority of the sound level measurements have been collected in the near field (well within 100 m) for studies involving unattenuated and attenuated pile driving using a bubble curtain.
[28] This phenomenon also was noted in Caltrans (2015). If sound was primarily being emitted through the water column, comparable reductions (or greater reductions with increasing water depths) should be produced with increasing distance from the source, not lesser reductions.

source level reductions relative to marine mammals. As such, the Commission recommends that, for all relevant incidental take authorizations, NMFS refrain from using a source level reduction factor for sound attenuation device implementation during impact pile driving, including the 24-in steel piles proposed for use by USACE, until such time that it consults with Caltrans regarding the appropriate source level reduction factor to use to minimize far-field effects on marine mammals.

Proposed one-year authorization renewals

NMFS has indicated that it may issue a second one-year[29] incidental harassment authorization renewal for this and other future authorizations if various criteria are met and after an expedited public comment period of 15 days. The Commission agrees that NMFS should take appropriate steps to streamline the authorization process under section 101(a)(5)(D) of the MMPA to the extent possible. However, the Commission is concerned that the renewal process proposed in the *Federal Register* notice is inconsistent with the statutory requirements—section 101(a)(5)(D)(iii) clearly states that proposed authorizations are subject to a 30-day comment period[30].

Another significant issue with the proposed 15-day comment period is the burden that it places on reviewers, who will need to review the original authorization and supporting documentation[31], the draft monitoring report(s), the renewal application or request[32], and the proposed authorization and then formulate comments very quickly. Depending on how frequently NMFS invokes the renewal option, how much the proposed renewal or the information on which it is based deviates from the original authorization, and how complicated the activities are and the taking authorization is, those who try to comment on all proposed authorizations and renewals, such as the Commission, would be hard pressed to do so within the proposed 15-day comment period. Therefore, the Commission recommends that NMFS refrain from using the proposed renewal process for USACE's authorization. The renewal process should be used sparingly and selectively, by limiting its use only to those proposed incidental harassment authorizations that are expected to have the lowest levels of impacts on marine mammals and that require the least complex analyses. Notices for other types of activities should not even include the possibility that a renewal might be issued using the proposed foreshortened 15-day comment period. If NMFS intends to use the renewal process frequently *or* for authorizations that require a more complex review or for which much new information has been generated (e.g., multiple or extensive monitoring reports), the Commission recommends that NMFS provide the Commission and other reviewers the full 30-day comment period as set forth in section 101(a)(5)(D)(iii) of the MMPA.

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[29] NMFS informed the Commission that the renewal would be issued as a one-time opportunity, after which time a new authorization application would be required. NMFS has yet to specify this in any *Federal Register* notice detailing the new proposed renewal process but should do so.

[30] See also the legislative history of section 101(a)(5)(D), which states "…in some instances, a request will be made for an authorization identical to one issued the previous year. In such circumstances, the Committee expects the Secretary to act expeditiously in complying with the notice and comment requirements." (H.R. Rep. No. 439, 103d Cong., 2d Sess. 29 (1994)). The referenced "notice and comment requirements" specify a 30-day comment period.

[31] Including the original application, hydroacoustic and marine mammal monitoring plans, take estimation spreadsheets, etc.

[32] Including any proposed changes or any new information.

The Commission hopes NMFS finds its letter useful. Please contact me if you have questions regarding the Commission's recommendations.

Sincerely,

Peter O. Thomas, Ph.D.,
Executive Director

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