



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

Mark Mazzola
City of Seattle
Department of Transportation
700 5th Avenue, Suite 3900
Seattle, WA 98124

Dear Mr. Mazzola:

On July 1, 2013, the National Marine Fisheries Service (NMFS) received a letter from the City of Seattle's Department of Transportation (SDOT) requesting regulations and issuance of a Letter of Authorization (LOA). Enclosed is an LOA issued to SDOT for the take of marine mammals incidental to pile driving activities during the Elliott Bay Seawall Project. This LOA is valid from October 22, 2013 through October 21, 2014.

This authorization is effective for 1 year, and covers the taking of Pacific harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), Steller sea lion (*Eumetopias jubatus*), harbor porpoise (*Phocoena phocoena*), Dall's porpoise (*Phocoenoides dalli*), southern resident and transient killer whales (*Orcinus orca*), humpback whale (*Megaptera novaengliae*), and gray whale (*Eschrichtius jubatus*) incidental to vibratory and impact pile driving and removal, provided the mitigation, monitoring, and reporting requirements are undertaken as required by the regulations and the LOA. SDOT must cooperate with any federal, state, or local agency monitoring the impacts of your activities, and submit a draft report to the NMFS Office of Protected Resources and the NMFS Northwest Regional Office no later than 90 days prior to expiration of this authorization.

If you have any questions concerning the LOA or its requirements, please contact Michelle Magliocca, Office of Protected Resources, National Marine Fisheries Service at (301) 427-8426.

Sincerely,

Donna S. Wieting, Director
Office of Protected Resources

Enclosures





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE

Letter of Authorization

The City of Seattle's Department of Transportation (SDOT), 700 5th Avenue, Suite 3900, Seattle, Washington 98124, is hereby authorized under section 101(a)(5)(A) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*; MMPA) to take small numbers of marine mammals incidental to pile driving activities associated with the replacement of the Elliott Bay Seawall in Seattle, Washington, subject to the provisions of the MMPA, the Regulations Governing Small Takes of Marine Mammals Incidental to Specified Activities (50 CFR Part 217, Subpart H) (the Regulations), and the following conditions:

1. This Authorization is valid from October 22, 2013 through October 21, 2014.
2. This Authorization is valid only for the unintentional taking of the species of marine mammals identified in 50 CFR 217.222(b) and Condition 3 of this Authorization incidental to pile driving activities associated with the replacement of the Elliott Bay Seawall in Seattle, Washington.
3. This Authorization is valid for the taking, by harassment only, of Pacific harbor seal (*Phoca vitulina richardsi*), California sea lion (*Zalophus californianus*), Steller sea lion (*Eumetopias jubatus*), harbor porpoise (*Phocoena phocoena*), Dall's porpoise (*Phocoenoides dalli*), southern resident and transient killer whales (*Orcinus orca*), humpback whale (*Megaptera novaengliae*), and gray whale (*Eschrichtius jubatus*). The taking by Level A harassment (including injury) or mortality is prohibited and may result in the modification, suspension, or revocation of this Authorization.
4. The taking of any marine mammal in a manner prohibited under this Authorization must be reported within 48 hours of the taking to the National Marine Fisheries Service (NMFS) Northwest Regional Administrator for Protected Resources and to the NMFS Division of Permits and Conservation, Office of Protected Resources. If injurious or lethal take is discovered during monitoring, pile driving activities, mitigation measures, and monitoring methods must be reviewed in coordination with NMFS, and appropriate changes made prior to the next pile installation or removal.



5. Mitigation Requirements:

The Holder of this Authorization, and any individuals operating under his authority, must conduct the activity identified in 50 CFR 217.220 and Condition 2 of this Authorization in a manner that minimizes, to the greatest extent practicable, adverse impacts on marine mammals and their habitats. When conducting operations identified in 50 CFR 217.220, the following mitigation measures must be implemented:

- (a) Limited Impact Pile Driving – All sheet piles shall be installed using a vibratory driver, unless impact driving is required to install piles that encounter consolidated sediments or for proofing load bearing sections.
 - (1) Any impact driver used in conjunction with vibratory pile driving shall employ sound attenuation devices, where applicable.
 - (2) Any attenuation devices that become available for vibratory pile driving shall be considered for additional mitigation.
- (b) Containment of Impact Pile Driving – The majority of permanent concrete piles shall be driven behind the temporary containment wall.
- (c) Additional Attenuation Measures – In the event that underwater sound monitoring shows that noise generation from pile installation exceeds the levels original expected, SDOT shall immediately notify NMFS so it can evaluate the need for implementation of additional attenuation devices or other mitigation measures.
- (d) Ramp-up – Ramp-up measures shall be used at the beginning of each day’s in-water pile-related activities if pile driving has ceased for more than 1 hour.
 - (1) If a vibratory hammer is used, contractors shall initiate sound from vibratory hammers for 15 seconds at reduced energy followed by a 1-minute waiting period. This procedure shall be repeated two additional times before full energy may be achieved.
 - (2) If a non-diesel impact hammer is used, contractors shall provide an initial set of strikes from the impact hammer at reduced energy, followed by a 1-minute waiting period, then two subsequent sets.
 - (3) Ramp-up shall be implemented if:
 - Pile driving or removal is delayed or shutdown for >15 minutes due to the presence of a delphinid or pinniped within or approaching the exclusion zone; or
 - If pile driving or removal is delayed or shutdown for >30 minutes due to the presence of a large whale.

(e) Marine Mammal Exclusion Zones – The following exclusion zones shall be established to prevent the Level A harassment of all marine mammals and to reduce the Level B harassment of large whales:

- An exclusion zone for delphinids and pinnipeds shall be established with a radius of 200 feet (61 meters) waterward of each steel sheet pile during impact pile driving;
- An exclusion zone for delphinids and pinnipeds shall be established with a radius of 50 feet (15 meters) waterward of each concrete pile during impact pile driving;
- An exclusion zone for large whales shall be established with a radius of 3,280 feet (1,000 feet) waterward of each steel sheet or concrete pile during impact pile driving;
- An exclusion zone for large whales shall be established with a radius of 2.5 miles (3,981 meters) waterward of each steel sheet pile during vibratory pile driving.

(1) Temporary buoys shall be used, as feasible, to mark the distance to each exclusion zone during in-water pile-related activities.

(2) The exclusion zones shall be used to provide a physical threshold for the shutdown of in-water pile-related activities.

(3) At the start of in-water pile related activities each day, a minimum of one qualified protected species observer shall be staged on land (or an adjacent pier) near the location of in-water pile-related activities to document and report any marine mammal that approaches or enters a relevant exclusion zone throughout the day.

(4) Additional land-based observers shall be deployed if needed to ensure the construction area is adequately monitored.

(5) Observers shall monitor for the presence of marine mammals 30 minutes before, during, and for 30 minutes after any in-water pile-related activities.

(6) In-water pile-related activities shall not occur if any part of the exclusion zones are obscured by fog or poor lighting conditions.

(f) Shutdown and Delay Procedures

(1) If a marine mammal is seen approaching or entering a relevant exclusion zone (as specified in § 217.224), observers will immediately notify the construction personnel operating the pile-related equipment to shut down pile-related activities.

(2) If a marine mammal(s) is present within the applicable exclusion zone prior to in-water pile-related activities, pile driving/removal shall be delayed until the animal(s) has left the exclusion zone or until 15 minutes (pinniped or small cetacean) or 30 minutes (large cetacean) have elapsed without observing the animal.

6. Monitoring

When conducting operations identified in 50 CFR 217.220, the Holder of this Authorization, and any individuals operating under his authority, must implement the following monitoring measures:

- (a) Visual Monitoring – At least two protected species observers shall be positioned on land near the 2.5 mile exclusion zone to monitor for marine mammals during vibratory pile-related activities or any other construction activities that may pose a threat to marine mammals.
 - (1) Observers shall use the naked eye, wide-angle binoculars with reticles, and any other necessary equipment to scan the Level B harassment isopleth;
 - (2) Observers shall work, on average, eight hours per day and shall be relieved by a fresh observer if pile driving lasts longer than usual (i.e., 12-16 hours);
 - (3) The number of observers shall be increased and/or positions changed to ensure full visibility of the Level B harassment isopleth;
 - (4) Land-based visual monitoring shall be conducted during all days of vibratory pile driving;
 - (5) All land-based monitoring shall begin at least 30 minutes prior to the start of in-water pile-related activities, and continue during active construction and for 30 minutes following the end of in-water pile-related activities;
 - (6) At a minimum, observers shall record the following information:
 - Date of observation period, monitoring type (land-based/boat-based), observer name and location, climate and weather conditions, and tidal conditions;
 - Environmental conditions that could confound marine mammal detections and when/where they occurred;
 - For each marine mammal sighting, the time of initial sighting and duration to the end of the sighting period;
 - Observed species, number, group composition, distance to pile-related activities, and behavior of animals throughout the sighting;
 - Discrete behavioral reactions, if apparent;
 - Initial and final sighting locations marked on a grid map; and
 - Pile-related activities taking place during each sighting and if/why a shutdown was or was not triggered.
- (b) Acoustic Monitoring – Acoustic monitoring shall be conducted during in-water pile-related activities to identify or confirm noise levels for pile-related activities during in-water construction.

(1) Acoustic data shall be collected using hydrophones connected to a drifting boat to reduce the effect of flow noise and an airborne microphone. There shall be a direct line of acoustic transmission through the water column between the pile and the hydrophones in all cases, without any interposing structures, including other piles.

(2) A stationary two-channel hydrophone recording system shall be deployed to record a representative sample (subset of piles) during the monitoring period. Acoustic data shall be collected 1 meter below the water surface and 1 meter above the sea floor.

(3) Background noise recordings (in the absence of pile driving) shall be collected to provide a baseline background noise profile. The results and conclusions of the study shall be summarized and presented to NMFS with recommendations for any modifications to the monitoring plan or exclusion zones.

(4) All sensors, signal conditioning equipment, and sampling equipment shall be calibrated at the start of the monitoring period and rechecked at the start of each day.

(5) Prior to monitoring, water depth measurements shall be taken to ensure that hydrophones do not drag on the bottom during tidal changes.

(6) Underwater and airborne acoustic monitoring shall occur for the first five steel sheet piles and the first five concrete piles for the duration of pile driving. If a representative sample has not been achieved after the five piles have been monitored (e.g., if there is high variability of sound levels between pilings), acoustic monitoring shall continue until a representative acoustic sample has been collected.

(7) Acoustic data shall be downloaded periodically (i.e., daily or on another appropriate scheduled) and analyzed following the first year of construction. Post-analysis of underwater sound level signals shall include the following:

- RMS values (average, standard deviation/error, minimum, and maximum) for each recorded pile. The 10-second RMS averaged values will be used for determining the source value and extent of the 120 dB underwater isopleth;
- Frequency spectra for each functional hearing group; and
- Standardized underwater source levels to a reference distance of 10 meters (33 feet).

(8) Post-analysis of airborne noise would be presented in an unweighted format and include:

- The unweighted RMS values (average, minimum, and maximum) for each recorded pile. The average values would be used for determining the extent of the airborne isopleths relative to species-specific criteria;
- Frequency spectra from 10 Hz to 20 kHz for representative pile-related activity; and
- Standardized airborne source levels to a reference distance of approximately 15 meters (50 feet).

(9) In the event noise levels surpass estimated levels for extended periods of time, construction shall be stopped and NMFS shall be contacted to discuss the cause and potential solutions.

7. Reporting:

The Holder of the Letter of Authorization must implement the following reporting requirements:

- (a) All marine mammal sightings shall be documented by observers on a NMFS-approved sighting form.
- (b) Marine mammal reporting shall include all data described previously, including observation dates, times, and conditions, and any correlations of observed marine mammal behavior with activity type and received levels of sound, to the extent possible.
- (c) A report with the results of all acoustic monitoring shall include the following:
 - (1) Size and type of piles;
 - (2) A detailed description of any sound attenuation device used, including design specifications;
 - (3) The impact hammer energy rating used to drive the piles, make and model of the hammer(s), and description of the vibratory hammer;
 - (4) A description of the sound monitoring equipment;
 - (5) The distance between hydrophones and depth of water and the hydrophone locations;
 - (6) The depth of the hydrophones;
 - (7) The distance from the pile to the water's edge;
 - (8) The depth of the water in which the pile was driven;
 - (9) The depth into the substrate that the pile was driven;
 - (10) The physical characteristics of the bottom substrate into which the pile was driven;
 - (11) The total number of strikes to drive each pile
 - (12) The results of the hydroacoustic monitoring, including the frequency spectrum, ranges and means for the peak and RMS sound pressure levels, and an estimation

of the distance at which RMS values reach the relevant marine mammal thresholds and background sound levels;

(13) Vibratory driving results would include the maximum and overall average RMS calculated from 30-s RMS values during the drive of the pile; and

(14) A description of any observable marine mammal behavior in the immediate area and, if possible, correlation to underwater sound levels occurring at that time.

- (d) An annual report on monitoring and mitigation shall be submitted to NMFS, Office of Protected Resources, and NMFS, Northwest Regional Office. The annual reports shall include data collected for each marine mammal species observed in the project area, including descriptions of marine mammal behavior, overall numbers of individuals observed, frequency of observation, any behavioral changes and the context of the changes relative to activities would also be included in the annual reports, date and time of marine mammal detections, weather conditions, species identification, approximate distance from the source, and activity at the construction site when a marine mammal is sighted.
- (e) A draft comprehensive report on monitoring and mitigation shall be submitted to NMFS, Office of Protected Resources, and NMFS, Northwest Regional Office, 180 days prior to the expiration of the regulations. The comprehensive technical report shall provide full documentation of methods, results, and interpretation of all monitoring during the first 4.5 years of the regulations. A revised final comprehensive technical report, including all monitoring results during the entire period of the regulations, shall be due 90 days after the end of the period of effectiveness of the regulations.
- (f) Reports required in Conditions 7(c), (d), (e) above will be subject to review and comment by NMFS. Any recommendations made as a result of such review must be addressed prior to acceptance by NMFS.
- (g) In the unanticipated event that the specified activity clearly cause the take of a marine mammal in a manner prohibited by this Authorization, such as an injury (Level A harassment), serious injury, or mortality, the Holder shall immediately cease the specified activity and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Michael.Payne@noaa.gov and Michelle.Magliocca@noaa.gov and the Northwest Regional Stranding Coordinator (Brent.Norberg@noaa.gov). The report must include the following information:
- (1) Time, date, and location (latitude/longitude) of the incident;
 - (2) Description of the incident;
 - (3) Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);

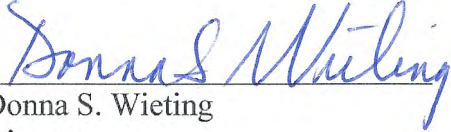
- (4) Description of all marine mammal observations in the 24 hours preceding the incident;
- (5) Species identification or description of the animal(s) involved;
- (6) Fate of the animal(s); and
- (7) Photographs or video footage of the animal (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with the Holder to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The Holder may not resume their activities until notified by NMFS via letter, email, or telephone.

- (h) In the event that the Holder discovers an injured or dead marine mammal, and the lead protected species observer determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), the Holder shall immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Michael.Payne@noaa.gov and Michelle.Magliocca@noaa.gov and the Northwest Regional Stranding Coordinator (Brent.Norberg@noaa.gov). The report must include the same information identified in Condition 7(g) above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with the Holder to determine whether modifications in the activities are appropriate.
 - (i) In the event that the Holder discovers an injured or dead marine mammal, and the lead protected species observer determines that the injury or death is not associated with or related to the activities authorized in Condition 3 of this Authorization (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the Holder shall report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Michael.Payne@noaa.gov and Michelle.Magliocca@noaa.gov and the Northwest Regional Stranding Coordinator (Brent.Norberg@noaa.gov), within 24 hours of the discovery. The Holder shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Activities may continue while NMFS reviews the circumstances of the incident.
8. Failure to comply with the terms and conditions contained in Subpart W – Taking of Marine Mammals Incidental to the Elliott Bay Seawall Project (50 CFR 217.220-217.227) may result in the modification, suspension or revocation of this Authorization.

9. A copy of this Authorization and the attached Subpart W of the regulations must be in the possession of each observer or group operating under the authority of this Letter of Authorization.

10. The Holder of this Authorization is required to comply with the Terms and Conditions of the Incidental Take Statement corresponding to NMFS' Biological Opinion as they pertain to listed marine mammals.



Donna S. Wieting
Director,
Office of Protected Resources
National Marine Fisheries Service

10/21/13

Date