



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

INCIDENTAL HARASSMENT AUTHORIZATION

The Chesapeake Tunnel Joint Venture (CTJV) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to harass marine mammals incidental to the Parallel Thimble Shoals Tunnel Project (PTST) near Virginia Beach, Virginia, when adhering to the following terms and conditions.

1. This Incidental Harassment Authorization (IHA) is valid from August 1, 2018, through July 31, 2019. This IHA is valid only for pile driving and extraction activities associated with the Parallel Thimble Shoals Tunnel Project.

2. General Conditions

- (a) A copy of this IHA must be in the possession of CTJV, its designees, and work crew personnel operating under the authority of this IHA.
- (b) The species authorized for taking are of harbor seal (*Phoca vitulina*), gray seal (*Halichoerus grypus*), bottlenose dolphin (*Tursiops spp.*), harbor porpoise (*Phocoena phocoena*) and humpback whale (*Megaptera novaeangliae*).
- (c) The taking, by Level A and Level B harassment, is limited to the species listed in condition 2(b). See Table 1 for number of takes authorized.
- (d) The take of any other species not listed in condition 2(b) of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA.
- (e) CTJV shall conduct briefings between construction supervisors and crews, marine mammal monitoring team, acoustical monitoring team prior to the start of all pile driving activities, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

3. Mitigation Measures

The holder of this Authorization is required to implement the following mitigation measures:

- (a) Time Restrictions — For all in-water pile driving activities, CTJV shall operate only during daylight hours.
- (b) Use of Bubble Curtain.



- (i) CTJV shall employ an encased bubble curtain during impact pile driving of plumb steel piles in water depths greater than 3 m (10 ft).
- (ii) CTJV shall implement the following performance standards:
 - (1) The bubble curtain must distribute air bubbles around 100 percent of the piling perimeter for the full depth of the water column.
 - (2) The lowest bubble ring shall be in contact with the mudline for the full circumference of the ring, and the weights attached to the bottom ring shall ensure 100 percent mudline contact. No parts of the ring or other objects shall prevent full mudline contact.
 - (3) CTJV shall require that construction contractors train personnel in the proper balancing of air flow to the bubblers, and shall require that construction contractors submit an inspection/performance report for approval by the CTJV within 72 hours following the performance test. Corrections to the attenuation device to meet the performance standards shall occur prior to impact driving.
- (c) Use of Soft-Start.
 - (i) CTJV shall use soft start techniques when impact pile driving. Soft start requires contractors to provide an initial set of strikes at reduced energy, followed by a thirty-second waiting period, then two subsequent reduced energy strike sets.
 - (ii) Soft start shall be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer.
- (d) Use of cushion blocks shall be required during impact installation.
- (e) Establishment of Shutdown Zones.
 - (i) CTJV shall establish a shutdown zone of 200 meters harbor porpoise and common dolphin.
 - (ii) CTJV shall establish a shutdown zone of 15 meters for harbor and gray seals.
 - (iii) CTJV shall establish shutdown zones for large whales (*i.e.* humpback whale) according to low-frequency isopleths provided in Table 2.
 - (iv) If a marine mammal comes within or approaches the shutdown zone during pile driving or pre-activity monitoring, pile driving operations shall cease or be delayed.

- (v) Pile driving and removal operations shall restart or begin after the marine mammal is visibly seen leaving the zone or after 15 minutes have passed with no sightings.
- (vi) For in-water heavy machinery work (using, *e.g.*, standard barges, tug boats, barge-mounted excavators, or clamshell equipment used to place or remove material), a minimum 10-m shutdown zone shall be implemented. If a marine mammal comes within 10 meters of such operations, operations shall cease and vessels shall reduce speed to the minimum level required to maintain steerage and safe working conditions.
- (vii) If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the designated Level B Isopleth pile driving and removal activities must shut down immediately. Activities must not resume until the animal has been confirmed to have left the area or the 15 minute observation time period has elapsed.

4. Monitoring

The holder of this Authorization is required to conduct visual marine mammal monitoring during pile driving activities.

- (a) Visual Marine Mammal Observation—CTJV shall collect sighting data and behavioral responses to pile driving for marine mammal species observed in the region of activity during the period of activity. Visual monitoring shall include the following:
 - (i) Pre-activity monitoring shall take place from 30 minutes prior to initiation of pile driving activity and post-activity monitoring shall continue through 30 minutes post-completion of pile driving activity. Pile driving may commence at the end of the 30-minute pre-activity monitoring period, provided observers have determined that the shutdown zone is clear of marine mammals, which includes delaying start of pile driving activities if a marine mammal is sighted in the zone.
 - (ii) Protected Species Observers (PSOs) shall be positioned at the best practicable vantage points, taking into consideration security, safety, and space limitations. The PSOs shall be stationed in a location that shall provide adequate visual coverage for the shutdown zone and monitoring zones.
 - (iii) A minimum of two PSOs shall be required during all pile driving activities. Monitoring locations shall be based on land both at Portal Island No. 1 and Portal Island No. 2 during simultaneous

driving or on the Portal Island with active driving during non-simultaneous driving.

- (iv) Monitoring will be continuous unless the contractor takes a break longer than 2 hours from active pile and sheet pile driving, in which case, monitoring will be required 30 minutes prior to restarting pile installation.
- (v) Distances to observed marine mammals shall be determined by using a range finder, scope, hand-held global positioning system (GPS) device or landmarks with known distances from the monitoring positions.
- (vi) PSOs shall continuously monitor the identified shutdown, Level A harassment, and Level B harassment zones as depicted in 3(e), 4(b), Table 2, and Table 3. Animals observed in these zones shall be recorded and acted upon, as appropriate.
- (vii) CTJV shall adhere to the following observer qualifications:
 - (1) Independent PSOs shall be used (*i.e.*, not construction personnel).
 - (2) At least one PSO must have prior experience working as a marine mammal observer during construction activities.
 - (3) Other PSOs may substitute education (degree in biological science or related field) or training for experience.
 - (4) CTJV shall submit PSO CVs for approval by NMFS.
- (viii) CTJV shall ensure that observers have the following additional qualifications:
 - (1) Ability to conduct field observations and collect data according to assigned protocols.
 - (2) Experience or training in the field identification of marine mammals, including the identification of behaviors.
 - (3) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.
 - (4) Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine

mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior.

- (5) Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

(b) Establishment of Level A and Level B Harassment Zones.

- (i) CTJV shall establish and monitor Level B zones according to values depicted in Table 3 during all pile driving activities.
- (ii) CTJV shall use an adaptive approach to identify Level A harassment zones during impact pile driving.

- (1) The number of plumb piles planned for a given day determines initial Level A harassment zone size as shown in Table 2.
- (2) If after the first pile is driven, no marine mammals have been observed in the Level A harassment zone, then the Level A harassment zone shall be reduced to the zone associated with the next lowest number of piles driven per day. If no marine mammals are observed within that zone, the zone shall again be reduced to the next lowest number of piles per day. This trend shall continue until an animal is seen approaching or entering a specified shutdown zone.
- (3) Once a marine mammal enters the Shutdown zone, the zone size in effect when the marine mammal enters shall remain in effect for the remainder of the day.
- (4) Pile driving activities shall not be conducted when weather/observer conditions do not allow for adequate sighting of marine mammals within the shutdown zone (*e.g.* lack of daylight/fog).
- (5) In the event of conditions that prevent the visual detection of marine mammals in the shutdown zone, impact pile driving shall be curtailed, but pile in progress shall be completed and then pile driving suspended until visibility conditions improve.

5. Reporting

- (a) A draft marine mammal monitoring report shall be submitted to NMFS within 90 days after the completion of pile driving and removal activities or a minimum of 60 days prior to any subsequent IHAs. A final report shall be prepared and submitted to the NMFS within 30 days following receipt of comments on the draft report from the NMFS.
- (b) The report shall include an overall description of work completed, a narrative regarding marine mammal sightings, and associated marine mammal observation data sheets. Specifically, the report must include:
 - (i) Date and time that monitored activity begins or ends;
 - (ii) Construction activities occurring during each observation period;
 - (iii) Weather parameters (*e.g.*, percent cover, visibility);
 - (iv) Water conditions (*e.g.*, sea state, tide state);
 - (v) Total number of individuals of each species detected within the Level A and Level B harassment zones, and estimated taken if a correction factor is used;
 - (vi) Daily average number of individuals of each species (differentiated by month as appropriate) detected within the Level A and Level B Zone, and estimated as taken if correction factor is used;
 - (vii) Each marine mammal sighting reported shall include the following:
 - (1) Species, numbers, and, if possible, sex and age class of marine mammals;
 - (2) Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
 - (3) Location and distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
 - (4) Estimated amount of time that the animals remained in the Level A and/or Level B harassment zones;
 - (5) Description of implementation of mitigation measures within each monitoring period (*e.g.*, shutdown or delay);
 - (6) Other human activity in the area.

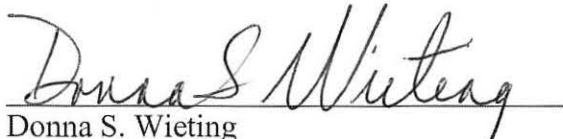
- (c) In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury, serious injury or mortality, CTJV would immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS (301-427-8401), and the Greater Atlantic Region New England/Mid-Atlantic Regional Stranding Coordinator (978-282-8478). The report would include the following information:
- (i) Description of the incident;
 - (ii) Environmental conditions (*e.g.*, Beaufort sea state, visibility);
 - (iii) Description of all marine mammal observations in the 24 hours preceding the incident;
 - (iv) Species identification or description of the animal(s) involved;
 - (v) Fate of the animal(s); and
 - (vi) Photographs or video footage of the animal(s) (if equipment is available).

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

- (d) In the event that CTJV discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition as described in the next paragraph), CTJV would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Greater Atlantic Region New England/Mid-Atlantic Regional Stranding Coordinator. The report would include the same information identified in the paragraph above. Activities would be able to continue while NMFS reviews the circumstances of the incident. NMFS would work with CTJV to determine whether modifications in the activities are appropriate.
- (e) In the event that CTJV discovers an injured or dead marine mammal and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), CTJV would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Greater Atlantic Region New England/Mid-Atlantic Region Stranding Coordinator, within 24 hours of the discovery. CTJV would provide photographs or video footage (if available) or other documentation

of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

6. This Authorization may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein, or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.
7. On a case-by-case basis, NMFS may issue a second one-year IHA without additional notice when 1) another year of identical or nearly identical activities as described in the Specified Activities section is planned or 2) the activities would not be completed by the time the IHA expires and a second IHA would allow for completion of the activities beyond the effective date, provided all of the following conditions are met:
 - (a) A request for renewal is received no later than 60 days prior to expiration of the current IHA.
 - (b) The request for renewal must include the following:
 - (i) An explanation that the activities to be conducted beyond the initial dates either are identical to the previously analyzed activities or include changes so minor (e.g., reduction in pile size) that the changes do not affect the previous analyses, take estimates, or mitigation and monitoring requirements.
 - (ii) 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.
 - (c) 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 remain the same and appropriate, and the original findings remain valid.


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

JUL 24 2018
Date

Table 1—Authorized Takes for PTST Project

Species	Authorized Level A Takes	Authorized Level B Takes
Humpback whale	--	5
Bottlenose dolphin	--	4,740
Harbor porpoise	4	6
Harbor seal	3,232	4,848
Gray seal	27	40

Table 2. Level A Harassment Isopleths (Meters) from Driven Pile(s) for Cetaceans and Phocid Pinnipeds for Scenarios Involving Impact Hammer

Class of Marine Mammals	Piles Per Day	Impact Hammer (Battered Pile)	Impact Hammer with Bubble Curtain Simultaneous (Plumb Pile)**	Simultaneous Driving – Vibratory Hammer and Impact Hammer with Bubble Curtain (Plumb Pile)
Low-Frequency Cetaceans*	8	N/A	1,366	860.6
	7	N/A	1,249.1	787.3
	6	N/A	1,127.7	710.4
	5	N/A	998.6	629.1
	4	N/A	860.6	542.1
	3	2,077.2	710.4	447.5
	2	1,585.2	542.1	341.5
	1	998.6	341.5	215.1
Mid-Frequency Cetaceans	8	N/A	48	30.6
	7	N/A	44.4	28.0
	6	N/A	40.1	25.3
	5	N/A	35.5	22.4
	4	N/A	30.6	19.3
	3	73.9	25.3	15.9
	2	56.4	19.3	12.1
	1	35.5	12.1	7.7
High Frequency Cetaceans	8	N/A	1,627	1,025.1
	7	N/A	1,488.6	937.8
	6	N/A	1,343.3	846.2
	5	N/A	1,189.5	749.4
	4	N/A	1,025.1	645.8
	3	2,474.3	846.2	533.1

Phocid Pinnipeds	2	1,888.3	645.8	406.8
	1	1,189.5	406.8	256.3
	8	N/A	731	460.5
	7	N/A	668.8	412.3
	6	N/A	603.5	380.2
	5	N/A	534.4	336.7
	4	N/A	460.5	290.1
	3	1,111.6	380.2	239.5
	2	848.3	290.1	182.8
	1	534.4	182.8	115.1

*These isopleths serve as shutdown zones for all large whales, including humpback and fin whales

**Assumes 1 pile installed at each island per day ranging from maximum of 16 piles to minimum of 2 piles.

Table 3. Level B Harassment Isopleths (Meters) from Driven Pile(s) for Cetaceans and Phocid Pinnipeds for Scenarios Involving Impact and Vibratory Pile Driving

Hammer Type Driving Scenario	Radial Distance (m)	
	Island 1	Island 2
Impact (battered)	1,585	1,585
Vibratory	2,155	2,155
Impact w/Bubble Curtain (plumb) at PI 1 and PI 2 simultaneous	345	345
Impact w/ Bubble Curtain (plumb) at PI 1 and Vibratory at PI 2 simultaneous	345	2,155
Vibratory at PI 1 and Impact w/Bubble Curtain (plumb) at PI 2 simultaneous	2,155	345