From:	Julie Crocker - NOAA Federal
To:	Grange, Briana
Subject:	[External_Sender] NRC"s request for reinitiation for Oyster Creek
Date:	Friday, May 24, 2019 11:58:56 AM
Attachments:	Letter Dated 11-03-2016.pdf

Hi Briana,

After reading through the request for reinitiation and talking it through with others, a few questions have come up that I am hoping you can answer. These will help us confirm what our next steps are.

1. Estimated Impingement. I've carefully reviewed the calculations presented by Exelon and noted in your reinitiation. It is my understanding that currently, and expected through March 2024, water withdrawal will only occur through the CWS and will be a maximum of 12,000 gpm. This compares to the fully operational scenario where water was withdrawn through the CWS and DWS with a combined intake of approximately 1,000,000 gpm. In their calculations, Exelon anticipates that the rate of impingement would be 2% of the rate during operations. However, 12,000/1,000,000 is 0.012. Can you explain why Exelon used 0.02 in your calculations rather than 0.012? Just rounding up to be more conservative or am I missing something in the math? Also, please note that I reran the numbers using an annual average derived from the actual observed take in 2012-2018 and compared it to the Exelon estimate which was based on the numbers predicted in the 2011 BiOp. The end results were very similar, but I would like to understand the 0.02 vs. 0.012. I also looked at just CWS impingements and that also didn't significantly change the expected impingement rate during the shutdown period.

2. It is my understanding that water withdrawal will cease in 2024, but NRC's action related to decommissioning will not end until 2080. As such, it seems that needs to be the timeframe for the reinitiated consultation. Is that correct? Will there be any intervening NRC actions between now and 2080?

3. You and Exelon note that dredging may be necessary to facilitate the movement of plant components off site via barge. These activities will need to be considered in the reinitiation. It is my understanding that dredging has occurred in the area previously. It may be reasonable for the purposes of the section 7 consultation to assume that past dredging practices (i.e., dredge type) would be used for future dredging. We are not aware of any impingement or entrainment of sea turtles in a suction dredge. You would need to consider any impacts to sea turtle forage and other habitat features. I can provide you with an example of a dredge analysis if that would be helpful. Similarly, because vessel strike is a concern for sea turtles, you will need to consider effects of an increase in vessel traffic (i.e, the barges). I've attached a copy of the consultation we did for the North Anna project that considered use of a temporary offloading facility and may be helpful to you.

Let me know if you have questions on my questions!

Julie

--
Julie Crocker
Endangered Fish Branch Chief

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UNITED STATES DEPARTMENT OF COMMERCE
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NOV - 3 2016

Joseph Donaghue, Chief
Licensing Branch 3
Office of New Reactors
US Nuclear Regulatory Commission
Washington, DC 20555-0001

RE: Docket: 52-017 Biological Assessment for Combined Operating License for North Anna Power Station, Unit 3

Dear Ms. Dixon-Herrity,

We have reviewed your request for consultation pursuant to section 7 of the Endangered Species Act, inclusive of the Biological Assessment (BA) prepared by the U.S. Nuclear Regulatory Commission (NRC) for Dominion's application for a Combined License (COL) to construct and operate a third nuclear reactor at the North Anna Power Station site in Louisa County, Virginia. The U.S. Army Corps of Engineers' Norfolk District (USACE) has issued Clean Water Act Section 404 and Section 10 Rivers and Harbors Act permits for site preparation activities. NRC is the lead Federal agency for this consultation. We concur with your determination that the proposed action, as defined in the Biological Assessment (BA), is not likely to adversely affect any listed species under our jurisdiction. The justification for our concurrence that the construction and operation of North Anna Unit 3 is not likely to adversely affect listed species is provided below. We also agree with your determination that a conference to consider effects to critical habitat proposed for the Chesapeake Bay Distinct Population Segment of Atlantic sturgeon is not necessary and provide our justification below.

Consultation History

As mentioned above, the NRC is considering Dominion's application for a COL. NRC issued an early site permit (ESP) to Dominion in November 2007. As part of the ESP process, NRC coordinated with us to determine if there were any ESA listed species in the project area; we determined that there were no species under our jurisdiction in the action area. The USACE issued a permit for project activities in September 2011. We listed five Distinct Population Segments (DPS) of Atlantic sturgeon under the ESA in February 2012. Coordination between NMFS and NRC regarding the North Anna project resumed in 2014 and we agreed that a consultation should occur to consider the effects of issuance of the COL. While the ESP and USACE permits authorized certain pre-construction activities, no activities that may affect NMFS listed species have occurred to date. We received your request for consultation on April 6, 2016 and requested additional information and clarification in June 2016. Additional information was provided in July 2016 and on August 23, 2016, you supplemented the BA with

an analysis of effects to the critical habitat proposed for the Chesapeake Bay DPS of Atlantic sturgeon and requested concurrence with your determination that conference is not necessary.

Proposed Action

The proposed action is described in the BA; further details are available in NRC's Supplemental EIS for the COL for North Anna Power Station Unit 3 (NUREG-1917; NRC 2010). In summary, Dominion proposes to construct and operate a new nuclear unit at the existing North Anna site in Virginia. Components of the action include construction at the North Anna site, operation of the new unit (including discharge and withdrawal of cooling water from Lake Anna), construction of a clear span bridge across the North Anna River to support the large component transport route, a transmission line corridor, and the Walkerton roll-off facility. No NMFS listed species occur at the North Anna site, along the transmission line corridor or in the North Anna River or Lake Anna. When constructed and licensed, the new facility is expected to operate for 40 years. Effects of operation of the new nuclear facility will be experienced in upland areas that compose the footprint of the new facility, along the transmission line corridor and in Lake Anna and the North Anna River. As described in the Environmental Impact Statement (EIS) issued by NRC for the issuance of the Early Site Permit (NUREG-1811, December 2006) and the Combined Operating License (NUREG-1917, February 2010), the effects of operation, including the effects of water withdrawal, radiological release and accidents, as well as effects of decommissioning, do not extend to waterbodies beyond Lake Anna and the North Anna River. Because NMFS listed species do not occur in areas where effects of operations will be experienced, no NMFS listed species will be exposed to any effects of operations of the new nuclear unit. Therefore, (we agree with your determination that no listed species under our jurisdiction will be exposed to any effects of those activities.

As noted in the BA, Atlantic sturgeon occur in the Mattaponi River where the Walkerton roll-off facility will be constructed. Atlantic sturgeon and listed sea turtles occur along the barge transport route between Norfolk, VA and the Walkerton facility. As such, this consultation will focus on the effects of the construction and operation of the Walkerton roll-off facility, including transport of materials along the barge transport route as those are the only activities where listed species could be exposed to effects.

Walkerton roll-off facility

The barge slip at the Walkerton roll-off location is a proposed temporary structure. The barge offloading facility would consist of a solid cofferdam constructed of filled sheetpile and a roll-on/roll-off ramp to connect the barge with the onshore roadway. Dominion plans to offload equipment approximately two to three times a year (for three years) from a barge that would travel from existing marine terminals in Norfolk, VA. The cofferdam would be 36.6 m (120 ft.) wide and extend approximately 51.8 m (170 ft.) into the river from the shoreline (total approximately 0.5 acres); additionally, five mooring dolphins (a total of 15 pilings) would be installed.

No in-water work will be performed February 15 through June 30 or August 1 through October 31. Dominion anticipates in-water work to install the cofferdam and dolphins will take two weeks to complete with pile driving occurring over three days. All pile installation will occur behind a full-depth turbidity/silt curtain. The roll-off facility will be used for approximately three

years, receiving a total of 10-11 barge shipments from existing barge terminals in Norfolk, VA. The cofferdam and mooring piles will be removed at the end of three years with all removal work occurring behind a full depth silt curtain outside of the two "no-work" windows.

Action area

The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). The action area consists of the footprint of the North Anna site, the waters of Lake Anna and the North Anna River that will be affected by the operation of the new nuclear unit, the transmission line corridor, the barge transport route to/from the Norfolk marine terminal and the Walkerton roll-off location including the area surrounded by the silt curtain in the Mattaponi River. The barge transport route consists of the Mattaponi and York river navigation channels and navigation channels within the Chesapeake Bay and the James River (from existing barge terminals in Norfolk, Virginia to the project site). This area is expected to encompass all of the direct and indirect effects of the proposed project.

NMFS Listed Species in the Action Area

Atlantic sturgeon occur in the action area. Four DPSs of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus)* are listed as endangered *(New York Bight, Chesapeake Bay, Carolina, and South Atlantic*) and one DPS as threatened (Gulf of Maine) under the ESA. The marine range for all five DPSs includes all marine waters, coastal bays and estuaries, from Labrador Inlet, Labrador, Canada to Cape Canaveral, FL. Proposed critical habitat is addressed below.

Atlantic sturgeon are well distributed throughout the Chesapeake Bay and occur in the waters that will be transited by the barge (i.e., James and York rivers and mainstem Bay). Information on use of the Mattaponi River is limited to the observation of breaching adults and the detection of a small number of tagged adult Atlantic sturgeon in the river (Jason Kahn, NMFS, personal communication January 2016[1]; VIMS, unpublished data[2]). Telemetry receivers are deployed in the Mattaponi River, providing coverage from near the confluence with the York River to the Route 360 bridge near rkm 112. Prior to summer 2015, tagged adult Atlantics sturgeon have been tracked only as far as eight miles upstream from the confluence with the York River (Jason Kahn, NMFS, personal communication January 2016) (approximately rkm 52) which is downstream of the Walkerton roll-off area. In summer and early fall of 2015, a female Atlantic sturgeon was detected on the furthest upstream receiver (rkm 112) (VIMS, unpublished data). In the fall of 2016, a small number of additional adult Atlantic sturgeon were detected in the Mattaponi. The number of Atlantic sturgeon using the Mattaponi river appears to be a small fraction of the number using the Pamunkey (Jason Kahn, personal communication). The

[1] Email and phone communications from Jason Kahn, fisheries biologist with NMFS Office of Protected Resources providing results from Atlantic sturgeon telemetry monitoring carried out by himself under Permit 19642 "Characterizing juvenile, sub-adult, and adult life stages of endangered Atlantic and Shortnose Sturgeon in the York, Rappahannock, Potomac, and Susquehanna Rivers, their tributaries, the Chesapeake Bay, and the Atlantic Coast."

[2] Unpublished information provided to NMFS from the Virginia Institute for Marine Science in a letter dated September 1, 2016 characterizing information collected by VIMS under Permit 19642 "Characterizing juvenile, sub-adult, and adult life stages of endangered Atlantic and Shortnose Sturgeon in the York, Rappahannock, Potomac, and Susquehanna Rivers, their tributaries, the Chesapeake Bay, and the Atlantic Coast."

detection of tagged Atlantic sturgeon upstream and downstream of the Walkerton project area confirm that Atlantic sturgeon are present in the area.

Researchers investigating the York River and its tributaries (Pamunkey and Mattaponi) have confirmed that spawning occurs in the Pamunkey River in the late summer. It is currently unknown if spawning occurs in the Mattaponi; however, suitable spawning habitat is present and this, combined with the detection of tagged adults at the same time of year as when spawning occurs in the adjacent Pamunkey, indicates that spawning is possible in the Mattaponi.

Assuming that Atlantic sturgeon in the Mattaponi River behave the same way as tagged Atlantic sturgeon in the Pamunkey River and consistent with the available information from the limited number of tagged adults detected in the river, we expect a few adults to begin entering the river in July, with the majority not entering the river until August. Adults would be present into October (J. Kahn, NMFS, personal communication; Hager *et al.* 2014; Kahn *et a*l. 2014). If spawning occurs in the Mattaponi, we expect it to occur at the same time of year as in the Pamunkey (e.g. in August and/or September);this is a reasonable assumption because of the close geographic proximity of the two rivers.

In-water work, including deployment of the full depth silt curtains and installation of the sheetpiles for the cofferdams and piles to support the mooring dolphins would occur over approximately two weeks in July or between November 1 and February 14 with pile driving occurring on three days. If the work occurs in July, a few adult Atlantic sturgeon could be present in the Mattaponi River. We expect adults to leave the river after spawning in August and/or September; therefore, if the work occurs in the November 1 – February 14 window, we would not expect adults to be present. If spawning is occurring in the Mattaponi River, we would expect that juveniles would be present in the river year round. Juveniles, subadults and adults may be present year-round along the barge transport route. While there is suitable spawning habitat (i.e., hard bottom habitat in the tidal freshwater reach) in the Mattaponi River (Bushnoe *et al.* 2005), the lack of hard bottom habitat in the area where the roll off facility will be constructed indicates that spawning and rearing of early life stages cannot occur in the area where effects of the construction of the roll-off facility will be experienced. Therefore, because there is no hard bottom habitat which is necessary for the development of eggs and early larvae, these life stages are not expected where effects of the construction of the Walkerton roll off facility will be experienced. Older larvae could occur in the action area during the November – February construction window.

Four species of federally listed threatened or endangered sea turtles under our jurisdiction are found seasonally in Chesapeake Bay: the threatened Northwest Atlantic Ocean distinct population segment (DPS) of loggerhead (*Caretta caretta*), and the endangered Kemp's ridley (*Lepidochelys kempi*), North Atlantic DPS green (*Chelonia mydas*) and leatherback (*Dermochelys coriacea*) sea turtles. Sea turtles are most likely to occur in the action area between June and October when water temperatures are above 11°C and depending on seasonal weather patterns, could be present in April and early November. Sea turtles would be present between April and November in the Chesapeake Bay portion of the barge transport route but not occur in the Mattaponi River.

Effects of the Action

As described in the BA, the majority of activities authorized by NRC and/or USACE will occur on land or will impact Lake Anna. The cooling system for Unit 3 involves the intake and discharge of water from Lake Anna. No NMFS listed species occur in Lake Anna; NMFS listed species will not be exposed to effects of activities occurring on land or in or around Lake Anna. This includes effects of the work to be done at the North Anna Power Station site and associated Route 700 parcels, the transmission line corridor and the large component transport route. The only activities that may affect NMFS listed species are the construction and operation of the Walkerton roll-off facility.

Construction of the Walkerton Roll-Off facility

Construction of the roll-off facility consists of installation of a cofferdam along the shoreline, installation of fill within the cofferdam and installation of fifteen 24" piles in three clusters of five to construct mooring dolphins. The piles and cofferdam will be installed behind a full-depth silt curtain.

Sediment Plume

Sediment will be disturbed during pile installation. The full depth silt curtain will be set prior to construction and extend along the river edge where the roll off facility will be constructed. The curtain is deployed in sections and it is extremely unlikely that any sturgeon would be trapped within the curtain because we expect they would swim away from the in-water activity associated with curtain deployment. We are not aware of any occurrences where sturgeon have been trapped within silt curtains in any location. The silt curtain will retain any increase in suspended sediment. Because no sturgeon will be present within the silt curtain, no sturgeon will be exposed to any effects of the increase in suspended sediment.

Noise

Installation of the sheet piles and 15 mooring dolphin piles will generate underwater noise. All piles will be installed with a vibratory hammer behind a full depth silt curtain. We have information on noise produced during the installation of similar size piles in the Hudson River (TZC 2014). In-field monitoring of the installation of a 4-foot diameter pile with a vibratory hammer (TZC 2014) indicates a peak SPL of 158 dB re 1uPa at a distance of 47 feet from the pile; noise decreased to a maximum peak SPL of 148 dB re 1uPa at a distance of 220 feet from the pile and decreased to a peak SPL of 136 dB re 1uPa at 555 feet from the pile. Noise was measured at 150 dB re 1uPa RMS at a distance of 47 feet from the pile and decreased rapidly to 130 dB re 1uPa RMS SPL at 220 feet and 119 dB re 1uPa RMS SPL at a distance of 555 feet from the pile. Available information on driving sheet piles with a vibratory hammer indicates we can expect noise 163 dB re 1 μPa^2-s cSEL at a distance of 16 feet or the driving of wood piles with an acoustic footprint of 150 dB re 1 μPa^2-s cSEL within 33 feet of the pile being driven (Jones and Stokes, 2009).

Sturgeon exposed to underwater noise of 206 dB re 1 µPa peak or cSEL greater than 187 dB re 1 μPa^2-s may experience physiological effects (FHWG 2008). Installation of piles with a vibratory hammer will not result in peak noise levels greater than 206 dB re 1 µPa or cSEL greater than 187 dB re 1 μPa^2-s. Thus, there is no potential for physiological effects due to exposure to this noise. Underwater noise greater than 150 dB re 1 µPa RMS is expected to be avoided by sturgeon (see Fewtrell 2003 and Mueller-Blenkle *et al.* 2010). The area where noise will be

greater than 150 dB re 1 µPa RMS will be within the silt curtain; therefore, no sturgeon will be exposed to potentially disturbing levels of underwater noise.

Effects to Benthic Resources
Information provided by NRC in September 2016 indicates that the area where the roll off facility will be constructed is mostly sandy substrate that is dominated by clams, snails, aquatic worms and crustaceans. Based on the presence of Atlantic sturgeon prey, we assume that foraging occurs in the area. The placement of the cofferdam and installation of the piles will reduce the amount of soft substrate available for foraging (0.57 acres and 0.07 acres, respectively) and will result in the displacement or mortality of some benthic resources that sturgeon prey on. However, the total area that would be affected by the proposed action is very small (approximately 0.64 acres) and is surrounded by similar habitat that has similar benthic resources. Further, this loss of habitat and associated loss of benthic resources will be temporary as all in-water structures will be removed after three years. Based on this information, the loss of a limited amount of potential forage in an area of approximately 0.64 acres will not have any measurable or detectable effects to sturgeon; therefore, these effects are insignificant.

Vessel traffic
Once the roll-off facility is constructed, it will be used to unload up to eleven barges of material over a three-year period. Barges would transit to the Walkerton facility from existing marine terminals in Norfolk, Virginia and travel in existing navigation channels from Norfolk, within the Chesapeake Bay to the York River and then into the Mattaponi River. Bulk material delivery scow barges typically have a draft of 11 feet maximum and a speed of 1 to 7 knots. The increase in vessel traffic in the action area is about one additional vessel every 100 days for three years; an increase of no more than 4 total round-trips per year. This is an extremely small increase in vessel traffic in the action area; over 1,000 ships per year visit the marine terminal at Norfolk and the York and Mattaponi Rivers are frequently used by recreational vessels, Naval ships, and barges transporting materials up and down the rivers.

Factors thought to be relevant to increasing risk of vessel strike include high speeds, limited clearance with the bottom, and restricted or narrow waterways; these factors all seem to contribute to the reduced ability of a sea turtle or sturgeon to avoid an oncoming vessel. Here, the risk of an interaction is reduced by the slow speed of the vessels. All of these barges are expected to move slowly (less than 7 knots). Slow operating speeds are expected to reduce the risk of vessel strike for sturgeon and sea turtles because they would allow for greater opportunity for individuals to avoid the vessel. There will be at least several feet of clearance between the barges and the bottom at the shallowest conditions, with more clearance in other conditions; given the swimming ability of sturgeon and sea turtles in the action area, a sturgeon or sea turtle should be able to swim under the vessel without getting hit. The areas to be transited by the barges are free flowing with no obstructions; therefore, there is ample room for a sturgeon or sea turtle to avoid a vessel. Given the slow operating speeds of the vessels, the clearance between the vessels and the river bottom, and the wide un-impeded geography of the action area, we expect sturgeon and sea turtles to be able to avoid any vessels. Combined with the very small number of vessels that will use the roll off facility (no more than 11 trips total over a three year period), it is extremely unlikely that a sturgeon or sea turtle will be struck by a project vessel. We have also considered whether avoiding these project vessels increases the risk of being struck

by non-project vessels operating in the action area. In order for this to occur, another vessel would have to be close enough to the project vessel such that the animal's evasive movements made it such that it was less likely to avoid the nearby vessel. Given common navigational safety practices (i.e., not traveling too close to other vessels to minimize the risk of collisions), it is extremely unlikely that another vessel would be close enough such that a sturgeon or sea turtle avoiding a project vessel would not be able to avoid another non-project vessel or that the risk of being struck by another non-project vessel would otherwise increase. Based on this analysis, effects are discountable.

Conclusions

We agree that activities to be carried out as described herein, including the construction and operation of the Walkerton roll-off facility, are not likely to adversely affect any NMFS listed species. As explained above, once the roll-off facility is removed, no NMFS listed species will be exposed to any effects of the operation of North Anna Unit 3.

Critical Habitat Proposed for the Chesapeake Bay DPS

A proposed rule regarding the designation of critical habitat for the Chesapeake Bay DPS of published in the Federal Register on June 3, 2016. The action area overlaps with portions of the proposed critical habitat in the James River (where the barge will transit the mainstem James River to Hampton Roads), the York River (where the barge will transit from the mouth of the York River to the confluence with the Mattaponi), and the Mattaponi River (the barge transit route and where the Walkerton roll off facility will be constructed). Once critical habitat is proposed, the requirement to conference is in place. Conference is required when a proposed action is likely to result in the destruction or adverse modification of proposed critical habitat. You have determined that the proposed action is not likely to adversely affect the proposed critical habitat and that conference is not necessary; here, we consider the impacts of the proposed action on critical habitat proposed for designation for the Chesapeake Bay DPS and whether the proposed action is likely to result in the destruction or adverse modification of proposed critical habitat.

The critical habitat designation is for habitats that support successful Atlantic sturgeon reproduction and recruitment. In order to determine if the proposed action may affect critical habitat, we consider whether it would impact the habitat in a way that would affect its ability to support reproduction and recruitment. Specifically, we consider the effects of the project on the physical and biological features of the proposed critical habitat. The essential features identified in the proposed rule are:

- suitable hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0-0.5 parts per thousand range) for settlement of fertilized eggs, refuge, growth, and development of early life stages;

- transitional salinity zones of 0.5-30 parts per thousand inclusive of waters with a gradual downstream gradient and soft substrate (e.g., sand, mud) downstream of spawning sites for juvenile foraging and physiological development;

- water depth of up to 27 meters absent physical barriers to passage (e.g., locks, dams, reservoirs, gear, etc.) between the river mouth and spawning sites for unimpeded movements of spawning adults as well as seasonal and physiological-dependent

movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary, and;

- Water with the temperature, salinity, and oxygen values that, combined, provide for dissolved oxygen values that support successful reproduction and recruitment (e.g., 6 mg/L for juvenile rearing habitat) and are within the temperature range that supports the habitat function (e.g., 13 to 26° C for spawning habitat and no more than 30° C for juvenile rearing habitat).

The barge transport route overlaps with portions of the critical habitat proposed for the James River, York River and the Mattaponi River. However, the movement of the barge from the facility in Norfolk to the Walkerton roll-off facility will not have any effects to any of the proposed features.

Effects at the Walkerton Project Area
The first feature (hard bottom habitat with salinity less than 0.05 ppt) is not present in the area that will be impacted by construction of the Walkerton roll off facility. While salinity can be less than 0.05 ppt at certain times of year, there is no hard bottom habitat in this area. Because this feature is not present, the project will have no effect on this feature.

The remaining three features are present in the action area. The installation of the cofferdam and the mooring piles will impact soft substrate within the transitional salinity zone. Because these structures will be removed after three years, the impact to this feature (reduction in the amount of soft substrate available in the action area) will be temporary. The estimated acreage of temporary habitat loss due to the pile and cofferdam footprints is approximately 0.5 acres. This is an extremely small percentage of the total soft-sediment benthic habitat in the Mattaponi River and an even smaller percentage of the total soft-sediment benthic habitat in the Chesapeake Bay DPS. Given the extremely small loss of soft-bottom benthic habitat and the temporary nature of this loss, it is extremely unlikely that the action will reduce the ability of the features to support the conservation needs of Atlantic sturgeon (i.e., reproduction and recruitment) in the action area.

The proposed action will not affect the habitat in a way that impedes the movements of spawning adults or juveniles; this is because it will not alter the depth of the action area in a way that makes the area inaccessible or result in the placement of physical barriers to passage. While the project will result in additional structures in the water, we do not expect the cofferdam located along the shoreline or the mooring piles to impede the movements of adult or juvenile sturgeon. Therefore, we do not anticipate any effects to the third feature.

The project will have no effect on salinity. No impacts to dissolved oxygen or temperature are anticipated. Effects to water quality are limited to a temporary increase of suspended sediment within the turbidity curtain while the piles are being installed and removed; these effects will only be experienced within the turbidity curtain for a few hours and are extremely unlikely to affect the ability of the habitat to support the conservation needs of Atlantic sturgeon in the action area.

In sum, it is not reasonable to anticipate that the temporary loss of an extremely small amount of soft substrate that could be used for juvenile foraging would result in a direct or indirect alteration of the proposed critical habitat that appreciably diminishes the value of the critical habitat for the conservation of the Chesapeake Bay DPS of Atlantic sturgeon. Therefore, we conclude the action is not likely to result in the destruction or adverse modification of the proposed critical habitat; therefore, conference is not necessary.

Reinitiation requirement

Reinitiation of consultation is required and shall be requested by NRC or by NMFS where discretionary federal involvement or control over the action has been retained or is authorized by law and (a) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or, (c) if a new species is listed or critical habitat designated that may be affected by the identified action. No take is anticipated or exempted for this particular action; take is defined in the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." If there is any incidental take of a listed species, reinitiation would be required. Any observations of sea turtles or sturgeon should be reported to us immediately.

If you have any questions about this correspondence, please contact Julie Crocker of my staff at (978) 282-8480 or by e-mail Julie.Crocker@noaa.gov.

Sincerely,

for Kimberly B. Damon Randall
Assistant Regional Administrator for
Protected Resources

Literature Cited

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TZC (Tappan Zee Constructors). 2014. Underwater Nosie Monitoring Results: P07Wb-03, P07WB-04. Unpublished report to the New York State Thruway Authority. June 20, 2014. 10 pp.

From: Julie Crocker - NOAA Federal
To: Grange, Briana
Subject: [External_Sender] Re: NRC"s request for reinitiation for Oyster Creek
Date: Friday, May 24, 2019 1:09:26 PM

If you need it, there is analysis of effects of suction (cutterhead) dredging on sea turtles (and sturgeon) in this document: https://www.greateratlantic.fisheries.noaa.gov/protected/section7/FHWA%20documents/fhwa_programmatic_esa_s7_consultation_april_2018.pdf

Julie

On Fri, May 24, 2019 at 12:01 PM Grange, Briana <Briana.Grange@nrc.gov> wrote:

> Julie,
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> Thank you. I'll be working on responses to these questions first thing next week. Have a good weekend!
>
> Briana
>
> **From:** Julie Crocker - NOAA Federal <julie.crocker@noaa.gov>
> **Sent:** Friday, May 24, 2019 11:57 AM
> **To:** Grange, Briana <Briana.Grange@nrc.gov>
> **Subject:** [External_Sender] NRC's request for reinitiation for Oyster Creek
>
> Hi Briana,
>
> After reading through the request for reinitiation and talking it through with others, a few questions have come up that I am hoping you can answer. These will help us confirm what our next steps are.
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> 1. Estimated Impingement. I've carefully reviewed the calculations presented by Exelon and noted in your reinitiation. It is my understanding that currently, and expected through March 2024, water withdrawal will only occur through the CWS and will be a maximum of 12,000 gpm. This compares to the fully operational scenario where water was withdrawn through the CWS and DWS with a combined intake of approximately 1,000,000 gpm. In their calculations, Exelon anticipates that the rate of impingement would be 2% of the rate during operations. However, 12,000/1,000,000 is 0.012. Can you explain why Exelon used 0.02 in your calculations rather than 0.012? Just rounding up to be more conservative or am I missing something in the math? Also, please note that I reran the numbers using an annual average derived from the actual observed take in 2012-2018 and compared it to the Exelon estimate which was based on the numbers predicted in the 2011 BiOp. The end results were very similar, but I would like to understand the 0.02 vs. 0.012. I also looked at just CWS impingements and that also didn't significantly change the expected impingement rate during the shutdown period.
>
> 2. It is my understanding that water withdrawal will cease in 2024, but NRC's action related to decommissioning will not end until 2080. As such, it seems that needs to be the timeframe for the reinitiated consultation. Is that correct? Will there be any intervening NRC actions between now and 2080?
>
> 3. You and Exelon note that dredging may be necessary to facilitate the movement of plant components off site via barge. These activities will need to be considered in the reinitiation. It is my understanding that dredging has occurred in the area previously. It may be reasonable for the purposes of the section 7 consultation to assume that past dredging practices (i.e., dredge type) would be used for future dredging. We are not aware of any impingement or entrainment of sea turtles in a suction dredge. You would need to consider any impacts to sea turtle forage and other habitat features. I can provide you with an example of a dredge analysis if that would be helpful. Similarly, because vessel strike is a concern for sea turtles, you will need to consider effects of an increase in vessel traffic (i.e, the barges). I've attached a copy of the consultation we did for the North Anna project that considered use of a temporary offloading facility and may be helpful to you.
>
> Let me know if you have questions on my questions!
>
> Julie
>
> --
>
> **Julie Crocker**
>
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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930-2276

April 30, 2018

Emily Biondi, Director
Office of Project Development & Environmental Review
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Ms. Biondi:

Since 2013, staff from the Federal Highway Administration (FHWA) and the National Marine Fisheries Service's (NMFS) Greater Atlantic Regional Office (GARFO) have collaborated under an inter-agency agreement (IAA) to develop the "FHWA GARFO 2018 NLAA Program." The FHWA NLAA Program Criteria, or "Criteria" together with this programmatic ESA section 7 consultation letter are jointly referred to as the FHWA GARFO 2018 NLAA Program (or Program). The Program consists of defined categories of activities, specific project design criteria (PDC), and Endangered Species Act (ESA) section 7 consultation procedures designed to ensure that effects of actions covered by this program are not likely to adversely affect ESA-listed species and designated critical habitat from projects, individually or in aggregate. This letter documents our informal, programmatic consultation considering four types of routine, non-controversial[1] projects that pose minimal risks to ESA-listed species and are funded, authorized, or carried out by FHWA. The four types of general projects are: (a) Bridge Repair, Demolition, and Replacement; (b) Culvert Repair and Replacement; (c) Docks, Piers, and Waterway Access Projects; and (d) Slope Stabilization. FHWA determined through the IAA that these projects are not likely to adversely affect (NLAA) the ESA-listed species and designated critical habitat under our jurisdiction that occur in the action area. This includes shortnose sturgeon (*Acipenser brevirostrum*), five distinct population segments (DPSs) of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), the Gulf of Maine DPS of Atlantic salmon (*Salmo salar*), the Northwest Atlantic DPS of loggerhead sea turtles (*Caretta caretta*), leatherback sea turtles (*Dermochelys coriacea*), Kemp's ridley sea turtles (*Lepidochelys kempii*), the North Atlantic DPS of green sea turtles (*Chelonia mydas*), North Atlantic right whales (*Eubalaena glacialis*), fin whales (*Balaenoptera physalus*), and critical habitat designated for North Atlantic right whales, the Gulf of Maine DPS of Atlantic salmon, and the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs of Atlantic sturgeon. A "not likely to adversely affect" determination is appropriate when

[1] This describes activities that are non-controversial from an ESA perspective; that is, they are not associated with any existing or reasonably foreseeable litigation against NMFS, FHWA, the state DOT, or the applicant, or the consideration in a consultation would not present a novel legal issue. Projects that are contentious for other non-ESA reasons may still be eligible for this programmatic consultation, provided all relevant thresholds and conditions are met.

all effects to species and critical habitat would be wholly beneficial, insignificant, or discountable. Insignificant effects are so minimal that cannot be meaningfully measured, detected, or evaluated; whereas discountable effects are those extremely unlikely to occur. Here, we provide our concurrence with your NLAA determination. This programmatic ESA section 7 consultation is effective upon date of signature of this letter. FHWA's funding, authorizing, or carrying out of four types of activities may affect but is not likely to adversely affect ESA-listed species.

FHWA provides financial resources and technical assistance to transportation agencies for the construction, maintenance, and operations of the nation's highway network and public roads. Although overseen by FHWA, such highway projects are commonly coordinated with, reviewed by, and carried out through state Departments of Transportation (state DOTs). These state DOTs are designated by FHWA as their non-federal representative for the purposes of informal section 7 consultation.

The NLAA determination is based on several factors including the implementation of work restrictions and other specific PDC to ensure that effects of actions considered in this programmatic consultation are insignificant and discountable individually and in aggregate.

Programmatic Consultation Background Information

NMFS is the principal federal agency responsible for administering the ESA for marine and diadromous species.[2] We work with FHWA and all other U.S. federal agencies and their partners to conserve threatened and endangered species and ensure that federal actions are not likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Prior to funding, authorizing, or carrying out transportation projects, FHWA and state DOTs must complete their own project reviews and are required to engage in ESA consultations on projects that may affect listed species or designated critical habitat under our jurisdiction. Through an IAA, FHWA and GARFO collaborated on programmatic approaches to ESA section 7 consultation to simplify reviews of routine, non-controversial transportation projects with minimal impacts in the Greater Atlantic Region, allowing project planning to occur with greater certainty.

Our agencies developed a range of techniques to streamline the procedures and time involved in consultations for broad agency programs or numerous similar activities with predictable effects on listed species and critical habitat. Some of these more common techniques, and the requirements for ensuring that streamlined consultation procedures comply with section 7 of the ESA and its implementing regulations, are discussed in the October 2002 joint NMFS and U.S. Fish and Wildlife Service (collectively known as the Services) memorandum, *Alternative Approaches for Streamlining Section 7 Consultation on Hazardous Fuels Treatment Projects* (www.fws.gov/endangered/esa-library/pdf/streamlining.pdf). Pursuant to this guidance, programmatic consultations may be conducted on any federal agency's proposal to apply specified standards or design criteria to future proposed actions. Programmatic consultations can evaluate the expected effects of groups of related agency actions expected to be implemented in the future, where specifics of individual projects such as project location are not definitively

[2] The U.S. Fish and Wildlife Service (U.S. FWS) has jurisdiction of Atlantic salmon in the freshwater portion of its range (except for work on hydropower dams), while we have jurisdiction of Atlantic salmon in estuarine and marine portions of its range.

known. A programmatic ESA section 7 consultation must identify PDC and/or standards that will be applicable to all future projects implemented under the program. The PDC included as part of this Program include effects minimization measures, stressor thresholds, and avoidance measures/time of year restrictions that define which projects are eligible for this programmatic ESA section 7 consultation. Projects that do not comply with these requirements are outside the scope of this consultation and would require separate, project-specific formal or informal section 7 consultation.

Programmatic consultations allow for streamlined reviews of a defined group of individual projects because the effects analysis is completed up front. At the project-specific consultation stage, a proposed activity is reviewed to determine if it can be implemented in accordance with the standards identified in the program. Consistent with the joint Services' memo referenced above, the following elements are included in a programmatic consultation to ensure its consistency with ESA section 7 and its implementing regulations:

1. PDC to prevent or limit future adverse effects on listed species and critical habitat;

2. Description of the manner in which projects to be implemented under the programmatic consultation may affect listed species and critical habitat and evaluation of expected level of effects from covered projects;

3. Process for evaluating expected projects and their effects as well as tracking of actual aggregate or additive effects of all projects expected to be implemented under the program. The programmatic consultation must demonstrate that when the PDC or standards are applied to each project, the aggregate effect of all projects are not likely to adversely affect listed species or their critical habitat;

4. Procedures for streamlined project-specific consultation. As discussed above, if an approved programmatic consultation is sufficiently detailed, project-specific consultations ideally will consist of findings made by action agency biologists and consulting agency biologists, respectively. An action agency will provide a description of a proposed project, or batched projects, and an assurance that the project(s) will be implemented in accordance with the standards. The resource agency reviews the submission and either concurs with the action agency, or identifies adjustments to the project(s) necessary to make it (them) consistent with the programmatic consultation;

5. Procedures for monitoring projects, reporting requirements, and validating effects predictions; and,

6. Comprehensive review of the program, generally conducted annually.

Description of the Proposed Action

FHWA funds, authorizes, and carries out transportation actions to maintain the integrity and safety of our nation's roads and bridges. Under this programmatic ESA section 7 consultation, the proposed action is the implementation of a specific subset of transportation projects funded, authorized, or carried out by FHWA, in whole or in part, in the Greater Atlantic Region.

Transportation projects are typically centered around building and maintaining roads, bridges, and culverts as well as occasional docks, piers, and waterway access structures (e.g., boat ramps). Associated activities may include establishing staging areas and installation of fill or platforms to provide temporary access to a project area, cofferdam construction and dewatering, site exploration using scientific devices, brush clearing and grubbing, grading, installing turbidity/sediment and erosion control measures, creating stormwater systems, scour repair, and road widening/stabilization. The stressors (i.e., the physical or environmental conditions that result from a project and may affect ESA-listed species) produced by the actions considered here, along with the effects of these stressors on ESA-listed species are thoroughly described in the NOAA Fisheries/FHWA Best Management Practices (BMP) Manual and generally include: underwater noise; impingement/ entrainment, and entanglement; water quality/turbidity; habitat alteration; and vessel traffic.

Under this Program, we consider the effects of FHWA funding, authorizing, or carrying out four categories of activities that incorporate the PDC outlined below. The action must not be associated in any way with known existing litigation against NMFS, FHWA, or the applicant. The following activities and associated sub-activities are included under this programmatic consultation; additional detail and activity descriptions are incorporated by reference from the Criteria. All conditions and environmental impact minimization measures contained within the Criteria are also included by reference.

A) Bridge Repair, Demolition, and Replacement:
    1) Cofferdams/Dewatering
    2) Demolition
    3) Pile Driving/Removal
    4) Dredging/Excavation
    5) Fill/Stabilization
    6) Vessel Activities
    7) Habitat Restoration
    8) Scientific Measurement Devices/Survey Activities
    9) Staging Area Establishment

B) Culvert Repair and Replacement:
    1) Cofferdams/Dewatering
    2) Demolition
    3) Excavation
    4) Fill/Stabilization
    5) Habitat Restoration
    6) Scientific Measurement Devices/Survey Activities
    7) Staging Area Establishment

C) Docks, Piers, and Waterway Access Projects:
    1) Cofferdams/Dewatering
    2) Demolition
    3) Pile Driving/Removal
    4) Excavation
    5) Fill/Stabilization

6) Vessel Activities
7) Habitat Restoration
8) Scientific Measurement Devices/Survey Activities
9) Staging Area Establishment

D) Slope Stabilization:
1) Cofferdams/Dewatering
2) Pile Driving/Removal
3) Excavation
4) Fill/Stabilization
5) Vessel Activities
6) Habitat Restoration
7) Scientific Measurement Devices/Survey Activities
8) Staging Area Establishment

Projects that do not fit into the described activity types are not included in the Program and will be subject to ESA section 7 consultation on an individual basis. This programmatic consultation imposes proposed actions that do fit the described activity types will incorporate the specific PDC into the actions as avoidance and minimization measures to be eligible for the Program.

FHWA GARFO 2018 NLAA Program Process

This Program streamlines the consultation process through use of a Verification Form. Completing and submitting the Verification Form documents the action's eligibility for the Program and completes the action agency's procedural requirements for section 7 of the ESA by confirming that the action is consistent with the scope of this programmatic consultation.

Verification Forms are not required for actions that FHWA determines will have no effect on ESA-listed species or critical habitat, because section 7 consultation is triggered by a "may affect" determination. We recommend that FHWA/state DOT document their "no effect" determination in the administrative record/project file for the action. For activities that FHWA/state DOT determines may affect listed species or designated critical habitat and are consistent with the scope of activities considered in this Program, FHWA or their designated non-federal representative must submit the project to us for review and receive our verification of eligibility before starting work. As noted above, any actions proposed by FHWA that are outside the scope of activities considered here (i.e., either inconsistent with the four project types, or consistent with the project type but not the PDC), that may affect ESA-listed species or critical habitat, must undergo a separate, individual consultation. While the PDC will minimize effects of transportation actions on ESA-listed species and critical habitat, this Program in no way requires that they be implemented for any project that is outside the scope of this consultation.

Specific measures are incorporated into this programmatic ESA section 7 consultation with the goal of ensuring that any effects to species/critical habitat listed by us are insignificant or discountable. The PDC discussed here and in the Criteria serve to further refine the scope of activities that are analyzed under this programmatic ESA section 7 consultation. These measures, as described in the Criteria and Standard Operating Procedures (SOPs), are considered part of the

overall action that is analyzed in this programmatic ESA section 7 consultation.

To help understand the scope of this consultation, we reviewed all requests for section 7 consultation received from FHWA or their designated non-federal representative from 2012-2016. During this period of time, we identified 31 transportation projects that would have been reviewed and potentially processed under the Program had it been in place during this period. The table below shows the breakdown of activity types and is an indication of the numbers and types of transportation projects that will undergo section 7 review via this programmatic ESA section 7 consultation in the future. Due to relatively stable levels of transportation funding, we anticipate similar numbers and types of projects in subsequent years.

Table 1. Transportation activity types and numbers (2012-2016)

Activity Type	**# of Activities in the Greater Atlantic Region (2012-2016)**
Bridge	22
Culvert	2
Dock/Pier/Waterway Access	5
Slope Stabilization	2
Total Projects	**31**

Project-Specific Design Criteria

Certain provisions (i.e., PDC) are incorporated into this programmatic consultation to avoid or minimize effects on ESA-listed species and critical habitat. PDC define limitations and parameters for activities, ensuring that all effects are insignificant or discountable. The PDC allow us to identify enough details about potential activities to carry out the consultation but allow for sufficient flexibility such that knowing the exact details of a project or location-specific information is not necessary.

The PDC detailed in the Criteria are part of the proposed action considered in this programmatic ESA section 7 consultation and covered projects must be consistent with all of the PDC or provide justification for why the project does not meet a particular PDC, but is still NLAA ESA-listed species or critical habitat. Our agencies designed these PDC to ensure that projects using the programmatic ESA section 7 consultation are NLAA any ESA-listed species or critical habitat in the action area.

Use of Verification Form

For those projects that you determine fit within the scope of this programmatic ESA section 7 consultation, you will complete and submit a Verification Form to us that demonstrates the action is eligible under this programmatic ESA section 7 consultation and this Program. The form will serve as a record to certify your determination, and our concurrence, that the proposed action may affect, but is NLAA ESA-listed species or critical habitat. The use of these forms will also allow us to ensure that aggregate effects of FHWA transportation activities considered under the Program do not adversely affect listed species since FHWA will track and analyze the activities on an annual basis using these forms. If you determine that there are adverse aggregate effects, this represents new information, which requires you to reinitiate consultation.

The Verification Form and SOPs are incorporated by reference from the Criteria and separate attachment. You will provide the completed form to us with the required information, and we will then review the Verification Form and note one of the following conclusions:

1. We concur with your determination that the proposed project is consistent with the Program;

2. We concur with your determination that the proposed project is consistent with the Program, with the justification described in an attachment to the Verification Form;

3. We cannot concur with your determination that the proposed project is consistent with the Program, and FHWA/state DOT should initiate a separate individual section 7 consultation.

You will track projects that are eligible for the Program in your annual monitoring reports and ensure that aggregate effects of these activities are monitored to ensure no significant effects occur. Tracking and reporting for NLAA consultations is required and FHWA will produce and submit reports to us on an annual basis. The annual reports must include information such as project type, description of the action, waterbody name/location, latitude/longitude coordinates and datum, status and duration of the project, stressors, species affected, and a summary of effects indicating compliance with the Program.

Description of the Action Area

The action area includes "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). In this case, the action area is defined as waters of the United States, specifically wetlands and navigable waters, within the states of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and the District of Columbia. The action area may include other areas within the proposed transportation project footprint (i.e., adjacent uplands), when activities will occur in those areas that may affect listed species.

The action area consists of the entire area within the Greater Atlantic Region where FHWA transportation project footprints will be located. This includes all areas experiencing effects such as turbidity plumes from sediment disturbing activities (e.g., dredging, excavation, fill, and stabilization), acoustic isopleths from pile driving or other in-water activities, impingement and/or entrainment[3] in permanent or temporary structures, collision risks due to vessel traffic, and altered water quality and habitat features due to construction, demolition, restoration, and survey activities.

The main geographic areas within the action area as they relate to ESA-listed species, designated

[3] Entrainment is the voluntary or involuntary movement of aquatic organisms from a water body into a surface diversion or through, under, or around screens and results in the loss of the organisms from the population. Impingement is the involuntary contact and entrapment of aquatic organisms on the surface of intake screens caused when the approach velocity exceeds the swimming capability of the organism (WDFW 1998).

critical habitat, and applicable PDC discussed in this programmatic consultation are as follows:

Gulf of Maine **-** broadly includes waters from the Maine/Canada border south to the tip of Cape Cod, Massachusetts.

Southern New England/New York Bight **-** broadly includes waters south of the tip of Cape Cod, Massachusetts, to Cape Henlopen, Delaware and includes Long Island Sound and Delaware Bay.

Chesapeake Bay **-** broadly includes the waters within and surrounding Chesapeake Bay in Delaware, Maryland, and Virginia from Cape Henlopen, Delaware, south to the Virginia/North Carolina border.

ESA-Listed Species and Critical Habitat Considered in this Programmatic Consultation

There are two species of marine mammals, four species of sea turtles, and seven species of fish listed under the ESA that occur in the action area and may be affected by the proposed actions. The action area overlaps with critical habitat designated for a number of these species. These species and critical habitat are described in Tables 2 and 3.

Table 2. ESA-listed species found in the action area (E = endangered, T = threatened)

Species	ESA Status	Expected Life Stages	Expected Behaviors	Expected Time of Year	Listing Rule	Newest Recovery Plan Date	Geographic Area(s)
North Atlantic Right Whale	E	Adults; juveniles	Foraging; wintering; migrating	Year round	73 FR 12024	NMFS 2005	Gulf of Maine, Southern New England/New York Bight, Chesapeake Bay
Fin Whale	E	Adults; juveniles	Foraging; wintering; migrating; calving	Year round	35 FR 18319	NMFS 2010	Gulf of Maine, Southern New England/New York Bight, Chesapeake Bay
Kemp's Ridley Sea Turtle	E	Juveniles	Foraging; migrating	May to November	35 FR 18319	NMFS *et al.* 2011	Gulf of Maine, Southern New England/New York Bight, Chesapeake Bay
Leatherback Sea Turtle	E	Adults; juveniles	Foraging; migrating	May to November	35 FR 849	NMFS & U.S. FWS 1992	Gulf of Maine, Southern New England/New York Bight, Chesapeake Bay
Loggerhead Sea Turtle; Northwest Atlantic DPS	T	Adults; subadults; pelagic/ benthic juveniles	Foraging; migrating	May to November	76 FR 58868	NMFS & U.S. FWS 2008	Gulf of Maine, Southern New England/New York Bight, Chesapeake Bay
Green Sea Turtle; North Atlantic DPS	T	Adults; juveniles	Foraging; migrating	May to November	81 FR 20057	NMFS & U.S. FWS 1991	Gulf of Maine, Southern New England/New York Bight, Chesapeake Bay
Atlantic sturgeon (all 5 DPSs)	E (GOM) T (4 others)	All life stages (eggs to adults)	Spawning & rearing (specific rivers); foraging; overwintering; migrating	Year round	77 FR 5880 and 77 FR 5914	N/A	Gulf of Maine, Southern New England/New York Bight, Chesapeake Bay

Shortnose sturgeon	E	All life stages (eggs to adults)	Spawning & rearing (specific rivers); foraging; over-wintering; migrating	Year round	32 FR 4001	NMFS 1998	Gulf of Maine, Southern New England/New York Bight, Chesapeake Bay
Atlantic salmon; Gulf of Maine DPS[4]	E	All life stages (eggs to adults)	Foraging, migrating, spawning, rearing, overwintering	April to Nov (ocean/ estua-ries); year round (fresh-water)	74 FR 29344	NMFS & U.S. FWS 2016	Gulf of Maine

Table 3. Designated critical habitat for ESA-listed species found in the action area

Critical Habitat	**Federal Register Citation**	**Location**	**Geographic Area(s)**
North Atlantic Right Whale	81 FR 4837	Gulf of Maine and Georges Bank	Gulf of Maine
Atlantic Salmon – Gulf of Maine DPS	74 FR 29300	45 areas of rivers, streams, and estuaries in the Gulf of Maine that occur or originate within the State of Maine that discharge to the Gulf of Maine	Gulf of Maine
Atlantic Sturgeon 1. Gulf of Maine DPS 2. New York Bight DPS 3. Chesapeake Bay DPS	82 FR 39160	1. Penobscot, Kennebec, Androscoggin, Piscataqua, and Merrimack rivers 2. Connecticut, Housatonic, Hudson, and Delaware rivers 3. Nanticoke, Potomac, Rappahannock, York, Pamunkey, Mattaponi, and James rivers and Marshyhope Creek	Gulf of Maine, Southern New England/New York Bight, Chesapeake Bay

The distribution, life history, and behaviors of these species, as well as the extent and physical and biological features (PBFs) of designated critical habitat, are summarized in our GARFO Maps and Species Tables, which are updated regularly and can be accessed here: www.greateratlantic.fisheries.noaa.gov/protected/section7/listing/index.html. PBFs for North Atlantic right whale, Atlantic salmon, and Atlantic sturgeon critical habitat are listed below.

Effects of the Actions Considered in this Programmatic Consultation

To assess the potential effects on ESA-listed species or critical habitat from projects to be funded, authorized, or carried out by FHWA that are consistent with the scope of this Program (i.e., one of the four project types and designed to be consistent with all relevant PDC), we assessed whether and to what extent ESA-listed species or critical habitat would be affected by certain stressors that may result from the proposed suite of activities considered here. Many of the activities will create similar stressors and similar effects.

The following table summarizes the stressors we expect will result from each of the four identified project types, and the potential for listed species or critical habitat to be exposed to

[4] According to the NMFS/U.S. FWS Statement of Cooperation (March 2009), U.S. FWS has the lead on all section 7 consultations on activities in freshwater, except dams, and NMFS has the lead on all section 7 consultations on activities within estuaries and marine waters. Therefore, Atlantic salmon in the freshwater portion of its range is not included in the Program.

stressors (Table 4).

Table 4. Potential stressors from each project type and potential for species/critical habitat exposure

	Project Type			
Potential Stressor	**Bridges**	**Culverts**	**Docks, Piers, and Waterway Access**	**Slope Stabilization**
Underwater Noise	X	X	X	X
Impingement/Entrainment and Entanglement	X	X	X	X
Water Quality/Turbidity	X	X	X	X
Habitat Alteration	X	X	X	X
Vessel Traffic	X		X	X

To be eligible for coverage under this Program, a project must meet the following PDC, regardless of activity category, or provide justification for why the PDC do not apply. That justification will then be reviewed by our section 7 biologist assigned to the project. If our section 7 biologist determines the justification is not acceptable, the project will not be eligible for the Program and FHWA/state DOT must initiate an individual ESA section 7 consultation on that project.

General

The General PDC are not specific to one of the individual stressor categories; instead, they encompass general exclusions that apply to all projects, regardless of activity category and associated stressors. The General PDC, along with the stressor-specific PDC, identify the types of projects eligible for the Program and thus limit the potential for projects to affect ESA-listed species or critical habitat by minimizing effects so that they are insignificant and/or discountable.

PDC

1. Ensure all operators, employees, and contractors are aware of all FHWA environmental commitments, including these PDC, when working in areas where ESA-listed species may be present or in critical habitat.
2. No work will individually or cumulatively have an adverse effect on ESA-listed species or critical habitat.
3. No work will occur in the tidally influenced portion of rivers/streams where Atlantic salmon presence is possible from April 10 through November 7.
4. No work will occur in areas identified as Atlantic or shortnose sturgeon spawning grounds[5] as follows:
    i. Gulf of Maine: April 1 through August 31
    ii. Southern New England/New York Bight: March 15 through August 31

[5] Best available river kilometer information regarding spawning and overwintering grounds for Atlantic salmon, shortnose sturgeon, and Atlantic sturgeon is found in the species tables provided by GARFO at: www.greateratlantic fisheries noaa.gov/protected/section7/guidance/maps/index.html. Regularly check this site for up to date information.

iii. Chesapeake Bay: March 15 through July 1 & September 15 through November 1

5. No work will occur in areas identified as sturgeon overwintering grounds[5] where dense aggregations are known to occur, as follows:
    i. Gulf of Maine: October 15 through April 30
    ii. Southern New England/New York Bight: November 1 through March 15
    iii. Chesapeake Bay: November 1 through March 15
6. Within designated Atlantic sturgeon critical habitat, no work will affect hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0-0.5 parts per thousand (ppt) range) for settlement of fertilized eggs, refuge, growth, and development of early life stages (PBF 1).
7. Work will result in no or only temporary/short-term changes in water temperature, water flow, salinity, or dissolved oxygen levels.
8. If it is possible for ESA-listed species to pass through the action area, a zone of passage with appropriate habitat for ESA-listed species (e.g., depth, water velocity, etc.) must be maintained (i.e., physical or biological stressors such as turbidity and sound pressure must not create a barrier to passage).
9. The project will not directly affect any submerged aquatic vegetation (SAV) or oyster reefs.
10. No blasting or use of explosives will occur.
11. No in-water work on dams or tide gates.

Underwater Noise (Acoustic Effects)

PDC

12. If pile driving is occurring during a time of year when ESA-listed species may be present, and the anticipated noise is above the relevant behavioral noise threshold, a 20-minute "soft start" is required to allow animals an opportunity to leave the project vicinity before sound pressure increases.
13. If the project involves driving steel piles, non-steel piles greater than 24-inches in diameter, or any other noise-producing mechanism, the expected underwater noise (pressure) must be below the physiological/injury noise threshold for ESA-listed species in the action area.
14. Any new pile-supported structure must involve the installation of no more than 50 piles (below MHW).

Bridge, dock, pier, and waterway access work, and shoreline stabilization activities may involve pile driving and could occur in months when ESA-listed species are expected to occur within the action area. The Program only considers work that results in underwater noise below the levels that are likely to result in injury to listed species. Projects with sound pressure estimates equal to or above the injury threshold for an ESA-listed species present will require individual section 7 consultation. Projects that include driving of concrete, timber, or plastic piles between the sizes of 12-24 inches, or sheet piles ≤24 inches with an impact or vibratory hammer are eligible for coverage under this Program, as each of these is known to produce sound levels below the injury thresholds for ESA-listed species at any distance, based on published measurements of underwater noise during pile installation (CalTrans 2015). In addition, projects that include pile driving of any size and type of pile (timber, concrete, plastic, and steel) with an impact or

vibratory hammer is eligible if FHWA/state DOT determines that injury thresholds to ESA-listed species will not be achieved. This analysis will be presented and reviewed by us as part of the Verification Form. If pile driving occurs during a time of year when ESA-listed species may be present, and the anticipated noise is above the behavioral noise threshold of those species, a 20-minute "soft start" is required to allow animals an opportunity to leave the project vicinity before sound pressure increases.

Effects to ESA-Listed Species from Noise Exposure

The installation of piles via pile driving can produce underwater sound pressure waves that may affect aquatic species, including shortnose sturgeon, Atlantic sturgeon, Atlantic salmon, sea turtles, and large whales. Effects can range from temporary avoidance of an area to injury or death. The type and size of pile, type of installation method (i.e., vibratory vs. impact hammer), type and size of the organism (smaller individuals are more susceptible to effects), distance from the sound source (i.e., the intensity of an acoustic pressure wave decreases as it moves away from the source), and conditions (i.e., sound propagation is affected by various factors such as water depth, bathymetry, currents, and substrate type), all contribute to the likelihood of effects to an individual. Generally, the larger the pile and the closer an individual is to the pile, the greater the likelihood of effects.

Based on published measurements of underwater noise during pile installation (CalTrans 2015), Table 5 describes non-steel pile driving that could be authorized under the proposed action. It estimates the average underwater noise levels produced by the installation of timber and concrete piles with impact and vibratory hammers. The estimated underwater noise levels (i.e., Peak, Root Mean Square (RMS), Sound Exposure Level (SEL), and Cumulative Sound Exposure Level (cSEL) are taken from a distance of 10 m (33 feet), using data provided in CalTrans 2015.

Table 5. Estimates for underwater noise

Diameter and Type of Pile	Hammer Type	Estimated Peak Noise Level (dB_{Peak})	Estimated Pressure Level (dB_{RMS})	Estimated Single Strike Sound Exposure Level (dB_{sSEL})
16-20" Timber	Impact	170	165	148
16-20" Timber	Vibratory	160	155	138
24" Concrete	Impact	185	170	160
24" Concrete	Vibratory	175	160	150
24" Steel Sheet	Impact	205	190	180
24" Steel Sheet	Vibratory	182	165	165

No noise estimates were available for the use of a vibratory hammer on the sized timber and concrete piles in Table 5. Generally, we expect plastic, timber, and concrete piles to have similar noise levels, so the estimates provided in Table 5 cover all non-steel piles, as well as steel sheet piles, less than or equal to 24 inches in diameter. If specific estimates are not provided, we estimate that vibratory hammers produce noise that is approximately 10 dB less than an impact hammer (Caltrans 2015).

The actual sound levels in this table are dependent on the geometry and boundaries of the

surrounding underwater and benthic environment (i.e., shallow/deep water, shoaled portions of channels, obstacles in the waterway), and thus, the values in the table are generalized estimates that represent the noise produced by pile driving measured at 10 meters from the sound source. As the distance from the source increases, underwater sound levels produced by pile driving are known to attenuate rapidly.

Physiological Effects to Sea Turtles, Sturgeon, and Salmon

Currently, there are no established thresholds for injury or behavioral disturbance for sea turtles. Increased sound levels in the aquatic environment may affect ESA-listed species under our jurisdiction in different ways at different decibel levels. McCauley *et al*. (2000a) noted that decibel levels of 166 dB re 1µPa_{RMS} were required before any behavioral reaction (e.g., increased swimming speed) was observed in sea turtles, and decibel levels above 175 dB re 1µPa_{RMS} elicited avoidance behavior of sea turtles. The study done by McCauley *et al.* (2000a), as well as other studies (McCauley *et al.* 2000b), used impulsive sources of noise (e.g., air gun arrays) to ascertain the underwater noise levels that produce behavioral modifications. Pile driving is also an impulse noise. As no other studies have been done to assess the effects of noise sources on sea turtles, McCauley *et al.* (2000a) serves as the best available information on the levels of underwater noise that may produce a startle, avoidance, and/or other behavioral or physiological response in sea turtles. Based on this, we believe any underwater noise levels at or above 166 dB re 1µPa_{RMS} has the potential to affect sea turtles (e.g., behavioral modification, temporary threshold shifts). Injury thresholds for sea turtles are estimated to be somewhat higher at 180 dB_{RMS} re 1µPa_{RMS}. We consider the potential for injury if sea turtles will be exposed to underwater noise above 180 dB_{RMS} re 1µPa_{RMS}. In all cases, we will only consider the potential for effects if the noise can be perceived by the species (i.e., frequencies <1,000 Hz).

Underwater noise and increased sound pressure created by pile driving may affect fish hearing and damage their air containing organs, such as the swim bladder. An interagency work group, including the U.S. FWS and NMFS, reviewed the best available scientific information and developed criteria for assessing the potential of pile driving activities to cause injury to fish (Fisheries Hydroacoustic Working Group (FHWG) 2008). The workgroup established dual sound criteria for injury, measured 10 meters away from the pile, of 206 dB re 1 µPa_{Peak} and 187 dB accumulated sound exposure level (dBcSEL; re: 1µPa^2•sec) (183 dB accumulated SEL for fish less than 2 grams). While this work group is based on the U.S. West Coast, species similar to Atlantic sturgeon, shortnose sturgeon, and Atlantic salmon were considered in developing this guidance (green sturgeon, Chinook salmon, and coho salmon). As these species are biologically similar to the species considered herein, it is reasonable to use the criteria developed by the FHWG.

Based on the best available information, noise levels produced by the driving of timber, plastic, and concrete piles between ≤ 24 inches and considered in this Program will produce underwater noise levels below 206 dB re 1 µPa Peak for sturgeon and salmon. All pile types and installation methods are also below the 180 dB_{RMS} re 1 µPa_{RMS} injury threshold for sea turtles, with the exception of 24-inch steel sheet piles installed with an impact hammer (see Table 5). In that scenario, estimated noise exposure above 180 dB_{RMS} could be experienced by sea turtles up to 30 meters from the pile being installed (see Table 6). However, upon exposure to noise levels at or above 166 dB_{RMS} (during the 20-minute soft start required by the PDC), we would expect sea

turtles to leave the action area in a matter of seconds. As such, it is not anticipated that sturgeon, salmon, or sea turtles will suffer injury due to pile driving conducted under the proposed action from peak or RMS measured noise levels.

Table 6. Estimated distances to sturgeon/salmon/sea turtle injury and behavioral thresholds

Diameter and Type of Pile	Hammer Type	Sturgeon/Salmon Thresholds			Sea Turtle Thresholds	
		Distance (m) to Behavioral Disturbance Threshold (150 dB_{RMS})	Distance (m) to 206 dB_{Peak} (injury)	Distance (m) to sSEL of 150 dB (surrogate for 187 dBcSEL injury)	Distance (m) to 166 dB RMS (behavior)	Distance (m) to 180 dB RMS (injury)
16-20" Timber	Impact	40.0	NA	NA	NA	NA
16-20" Timber	Vibratory	20.0	NA	NA	NA	NA
24" Concrete	Impact	50.0	NA	30.0	NA	NA
24" Concrete	Vibratory	30.0	NA	10.0	18.0	NA
24" Steel Sheet	Impact	90.0	NA	70.0	58.0	30.0
24" Steel Sheet	Vibratory	40.0	NA	40.0	NA	NA

A single strike SEL of 150 or greater can lead to a cumulative SEL (cSEL) higher than the 187 dB re: lµPa2 •sec that is considered a threshold for physiological injury to sturgeon and salmon. The Practical Spreading Loss Model is often used to calculate underwater noise impacts and the distance at which a specific cSEL value is attained. However, as this model is not appropriate in this action area (riverine, coastal, bay environments), we have considered an alternative means to establish a distance from a pile where noise levels with the potential to cause physiological effects to fish could be experienced.[6] We recognize that a single strike SEL below 150 dB will not contribute to the overall cSEL because it has virtually no effect on fish; that is, it will never accumulate to levels reaching 187 dB cSEL and thus was deemed the level of "effective quiet" (Stadler and Woodbury 2009). Therefore, the distance from the pile to where the sSEL level drops to 150 dB is the maximum distance from a pile that a fish may be physiologically impacted, regardless of how many times the pile is struck or how long the pile is vibrated (i.e., at X meters from a pile, SEL=150 dB; thus, further than X meters from a pile, there is no potential for physiological effects) (Stadler and Woodbury 2009). Calculating this distance, therefore, allows us to establish the size of the area near the pile where physiological effects could be experienced, with any fish outside of the 150 dB isopleth not expected to be exposed to noise levels with the potential to cause physiological effects to fish. The driving of concrete and steel sheet piles with an impact or vibratory hammer can yield noise levels in excess of 150 dB. Neither of the noise estimates for timber piles exceeded the 150 dB sSEL level of effective quiet. Therefore, based on an attenuation rate of 5 dB for every 10 meters, the estimated maximum distance from the pile driving location to the point where noise drops below the threshold of effect for fish is 10-70 meters for concrete and steel sheet piles, depending on the installation

[6] The Practical Spreading Loss Model is based on geometric spreading and assumes that sound propagation is occurring within an open water ecosystem (e.g., middle of the ocean), unbound by geographic features, such as shorelines. This model does not consider important physical factors or features of the aquatic and surrounding environment, such as temperature, bottom topography, depth, or geography of the affected area (e.g., presence of landmasses or shorelines within the affected water body), that are known to greatly affect the propagation/attenuation of sound in water (Bastasch *et al*. 2008; e.g., 78 FR 29705, May 21, 2013). We find that the Practical Spreading Loss Model overestimates the distance at which underwater noise levels are reached in environments such as rivers or narrow bays that are not "open water" (Bastasch *et al*. 2008). Due to the nature of the model, any estimates obtained are unrealistically large and thus do not appropriately represent the acoustic footprint of an action in a confined, non-open ocean environment.

method. Therefore, for sturgeon and salmon, the 187 dBcSEL criteria for injurious levels of cumulative noise could be met within the 10-70 meters (depending on the installation method) 150 dB SEL isopleth produced while a pile is driven. However, to reach the 187 dBcSEL threshold, a fish would need to remain within 10-70 meters of the pile being driven for the entirety of each pile installation period. In the unlikely event that a sturgeon or salmon is near the pile when pile installation begins, we expect the noise generated during the required "soft start" will cause an individual to leave the area (see assessment of behavioral impacts below). That is, it is extremely unlikely that a sturgeon or salmon would remain within 10-70 meters of any pile being installed for the duration of the procedure. Thus, based on the best available information, it is extremely unlikely that any sturgeon or salmon will be exposed to underwater noise that could result in physiological effects. Therefore, the potential for physiological effects to sturgeon or salmon resulting from the noise effects of driving non-steel piles ≤ 24 inches in diameter and steel sheet piles ≤ 24 inches in width is discountable.

In consideration of these thresholds, to be eligible for coverage under this consultation, noise levels must be below 206 dB re 1 µPa $_{Peak}$ for shortnose and Atlantic sturgeon and Atlantic salmon, and below 180 dB$_{RMS}$ re 1µPa$_{RMS}$ for sea turtles within 10 meters of the pile being driven. As long as FHWA/state DOT verifies this through an acoustic analysis, or the pile sizes (by material type) are below those listed in the PDC, it is not anticipated that sturgeon, salmon, or sea turtles will be exposed to noise levels that could result in injury.

Behavioral Effects on Sturgeon, Salmon, and Sea Turtles

Given the available information from studies on other fish species (Andersson *et al.* 2007; Wysocki *et al.* 2007; Purser and Radford 2011), we consider 150 dB re 1 µPa$_{RMS}$ to be a reasonable estimate of the noise level at which exposure may result in behavioral modifications in sturgeon and salmon. As such, for the purposes of this consultation, we will use 150 dB re 1 µPa $_{RMS}$ as a conservative indicator of the noise level at which there is the potential for behavioral effects. That is not to say that exposure to noise levels of 150 dB re 1 µPa $_{RMS}$ will always result in behavioral modifications, but that there is the potential, upon exposure to noise at this level, to experience some behavioral response (e.g., temporary startle to avoidance of an ensonified area).

Behavioral effects, such as avoidance or disruption of foraging activities, may occur in sea turtles and sturgeon/salmon at noise levels exceeding 166 dB re 1 µPa$_{RMS}$ and 150 dB re 1 µPa$_{RMS}$, respectively. Noise levels will have attenuated below 166 dB re 1 µPa RMS 18-58m from a 24-inch concrete or steel sheet pile (depending on the installation method); and below 150 dB re 1 µPa RMS 20-90 meters from the any type of non-steel pile or steel sheet pile ≤24-inches. Overall, effects of increased noise levels will be temporary and sporadic and only occupy small areas of a waterbody where work is undertaken. Structures covered under the Program are located close to land; therefore, sound will be attenuated by the shoreline.

The temporary increase in noise from pile driving does not represent a significant barrier to necessary life functions of sea turtles, sturgeon, or salmon. Within riverine tributaries and coastal bays/inlet habitats that support ESA-listed species, increased noise levels within 18-90 meters of temporary pile driving activities, that are limited in size and scope based on the PDC, will still allow passage within applicable waterbodies in the action area for listed species (as required by

the PDC). Therefore, any effects of pile driving for non-steel piles ≤ 24 inches in diameter and steel sheet piles ≤ 24 inches in width, as analyzed in this programmatic consultation or confirmed on a project-specific basis, and the resulting increase in underwater noise levels, are so small they cannot be detected, and are therefore, insignificant.

Physiological and Behavioral Effects on Whales

If ESA-listed whales are in the action area, FHWA/state DOT will also need to use the NMFS user spreadsheet for calculating the effect distances (i.e., isopleths) from a source for marine mammal permanent threshold shift (PTS) onset thresholds (available at: www.nmfs.noaa.gov/pr/acoustics/guidelines.htm). Using this spreadsheet, FHWA/state DOT must show that proposed pile driving or noise producing activity will not injure ESA-listed whales.

FHWA/state DOT is also responsible for showing that the ensonified areas created by proposed pile installation or other noise producing activities will not adversely affect any behavior of ESA-listed whales (i.e., create a barrier for passage for species that are migrating through the action area). FHWA/state DOT can make these determinations using GARFO's Acoustic Tool (available at: www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/consultation/index.html), or using other methods that rely upon the best available information. FHWA/state DOT must provide the information they use to make these determinations with their completed Verification Form. If our section 7 biologist determines that the determination/justification is not acceptable, the project will not be eligible for the programmatic consultation and FHWA/state DOT must initiate an individual ESA section 7 consultation on that project.

Based on this information, the temporary increase in noise from pile driving does not adversely affect the behavior of sturgeon, salmon, sea turtles, or large whales. Within habitats that support ESA-listed species, increased noise levels within close vicinity of temporary pile driving activities, that are limited in size and scope based on the PDC, will still allow passage within applicable waterbodies in the action area for listed species. Therefore, any effects from pile driving and other noise producing activities and the resulting increase in underwater noise levels, as analyzed in this programmatic consultation, are so small they cannot be detected, and are therefore, insignificant.

Impingement/Entrainment and Entanglement

PDC

15. Only mechanical, cutterhead, and low volume hopper dredges may be used.
16. No new dredging in Atlantic sturgeon or Atlantic salmon critical habitat (maintenance dredging still must meet all other PDC). New dredging outside Atlantic sturgeon or salmon critical habitat is limited to one-time dredge events (e.g., burying a utility line) and minor (≤2 acres) expansions of areas already subject to maintenance dredging.
17. Temporary intakes related to construction must be equipped with 2 mm wedge wire mesh screening and must not have greater than 0.5 feet per second intake velocities, to prevent impingement or entrainment of any ESA-listed species.

18. Work behind cofferdams, turbidity curtains, and other methods to block access of animals to a dredge footprint is required when ESA-listed species may be present.
19. No new permanent surface water withdrawal, water intakes, or water diversions.
20. Turbidity control measures, including cofferdams, must be designed to not entangle or entrap ESA-listed species.
21. Any in-water lines, ropes, or chains must be made of materials and installed in a manner to minimize or avoid the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle. Lines can be enclosed in a rigid sleeve.

You determined that the repair, demolition, and replacement of bridges and culverts; dock, pier, and waterway access projects; and slope stabilization activities using approved methods to exclude animals from entering a construction footprint (e.g., turbidity curtains, diversion structures, etc.); floats tethered to the bottom by lines and chains; and temporary intakes/diversions are not likely to adversely affect ESA-listed species. Activities that fit within the scope of these conditions may be approved via the Verification Form. These restrictions serve to reduce the scope of activities that may be included under the Program thus reducing the scope of potential effects due to impingement/entrainment and entrapment.

Effects to ESA-Listed Species from Impingement/Entrainment and Entanglement

Projects that occur in salmon and sturgeon spawning, rearing, or overwintering habitat and include dredging of any kind (mechanical, hydraulic cutterhead, or hopper dredging) or the use of water intake pumps, are not eligible for the Program and are outside the scope of this consultation. Because we do not expect any dredging or water intakes to operate in areas where Atlantic salmon, shortnose sturgeon, or Atlantic sturgeon eggs or larvae are present, these life stages will not be exposed to any effects of dredging or water intake activities.

Mechanical Dredging

Large whales, sea turtles, and Atlantic salmon are not known to be vulnerable to entrainment in mechanical clamshell or bucket dredges, and there are only a few documented instances of sturgeon being captured in this type of dredge equipment. Mechanical dredges are relatively stationary. While operating, the dredge swings slowly in an arc across the channel cut as material is excavated. This is often accomplished by pivoting the dredge on vertical pilings called spuds that are alternately raised and lowered from the stern corners of the dredge. Cables to anchors, set roughly perpendicular to the forward section of the dredge, are used to shift the lateral position of the digging area. Periodically, as the cut advances, the anchors are reset. Bucket dredging entails lowering the open bucket through the water column, closing the bucket after impact on the bottom, lifting the bucket up through the water column, and emptying the bucket into a barge. An environmental clamshell dredge differs from traditional dredging buckets by having an outer covering that seals when the bucket is closed. Water passes through its top moveable vents as it submerges, thereby reducing turbidity. Once it lifts off the bottom and closes, the covering seals over the bucket and minimizes overspill as the dredge bucket moves back up through the water column. To be captured in a dredge bucket, an animal must be on the bottom in the immediate area where the dredge bucket is opened. Aquatic species can be captured in dredge buckets and can be injured or killed if entrapped in the bucket or buried in sediment during dredging and/or when sediment is deposited into the dredge scow. Animals

captured and emptied out of the bucket can suffer stress or injury, which can lead to mortality.

Sturgeon

In 2012, the USACE provided us with a list of all documented interactions between dredges and sturgeon reported along the U.S. East Coast; reports dated as far back as 1990 (USACE 2011). In the situations described below, the scale and scope of the USACE projects is much greater than that proposed for any of the FWHA projects to be included under this programmatic ESA section 7 consultation. This list includes four incidences of sturgeon captured in dredge buckets. These include the capture of a decomposed Atlantic sturgeon in Wilmington Harbor in 2001; the condition of this fish indicated it was not killed during the dredging operations and was likely dead on the bottom or in the water column and merely scooped up by the dredge bucket. Another record is of the capture of an Atlantic sturgeon in Wilmington Harbor in 1998; however, this record is not verified and not considered reliable. The other two records listed in the report are a live Atlantic sturgeon captured at the Bath Iron Works (BIW) facility in the Kennebec River, Maine, in 2001, and a fresh dead shortnose sturgeon captured at BIW in 2003. In addition, we have one report of a live shortnose sturgeon captured in a dredge bucket at BIW in 2009 that was not included in the report. Observer coverage at dredging operations at BIW has been 100% for approximately 15 years, with dredging occurring every one to two years.

The risk of interactions between ESA-listed sturgeon and dredges is thought to be highest in areas where large numbers of sturgeon are known to aggregate, such as overwintering sites or foraging concentrations. The BIW facility, where three of five recorded interactions between sturgeon and mechanical dredges have occurred, is in an area where foraging sturgeon are known to aggregate in the summer months. The risk of capture may also be related to the behavior of the sturgeon in the area. While foraging, sturgeon are at the bottom of the river interacting with the sediment. This behavior may increase the susceptibility of capture with a dredge bucket. The risk may be higher in areas where high numbers of sturgeon are present in a small area as this could increase the likelihood of an interaction. We also expect the risk of capture to be higher in areas where sturgeon are overwintering in dense aggregations as overwintering sturgeon may be less responsive to stimuli which could reduce the potential for a sturgeon to avoid an oncoming dredge bucket.

Projects that include dredging or water intakes in sturgeon spawning, rearing, or overwintering habitat is not eligible for this programmatic; this means that dredging will only occur in areas where these risk factors are not present. Because mechanical dredging operates in a manner where the dredge bucket moves slowly and there is no suction, outside of areas with dense concentrations of sturgeon, dredging operations are extremely unlikely to entrain shortnose sturgeon or Atlantic sturgeon based on the physical nature and operation of the machinery. Because this Program only considers dredging outside of those areas of high density, any interactions with sturgeon are extremely unlikely to occur and the effects are discountable.

Salmon

Projects that occur in salmon spawning, rearing, or overwintering habitat and include dredging of any kind (mechanical, hydraulic cutterhead, or hopper dredging) or the use of water intake pumps, are not eligible for the Program and are outside the scope of this consultation. Because

we do not expect any dredging or water intakes to operate in areas where Atlantic salmon eggs or larvae are present, these life stages will not be exposed to any effects of dredging or water intake activities.

Sea Turtles

Sea turtles are also not known to be vulnerable to capture in mechanical dredge buckets (e.g., environmental clamshell dredge), presumably because they are able to avoid the relatively slow moving dredge bucket. As a result, any sea turtles present in any portion of the action area are not expected to be injured or killed as a result of mechanical dredging operations. Based on this information, we have determined that the likelihood of an interaction between a sea turtle and the dredge bucket is extremely unlikely and therefore any effects are discountable.

Cutterhead Dredging

The cutterhead dredge operates with the dredge head buried in the sediment; however, a flow field is produced by the suction of the operating dredge head. The amount of suction produced is dependent on linear flow rates inside the pipe and the pipe diameter (Clausner and Jones 2004). High flow rates and larger pipes create greater suction velocities and wider flow fields. The suction produced decreases exponentially with distance from the dredge head (Boysen and Hoover 2009). Additionally, cutterhead dredge heads do not begin operating until they are placed within the sediments at the dredge site, making it extremely unlikely for listed species to have exposure to the suction.

Whales

Whales are too large to be susceptible to entrainment or impingement by a cutterhead dredge. As such, the likelihood that a whale would be impinged or entrained during any dredge events is extremely unlikely, and therefore, discountable.

Sea Turtles

Sea turtles are not known to be vulnerable to entrainment in hydraulic cutterhead dredges, presumably because they are able to avoid the relatively small intake and low intake velocity associated with this type of dredge. Based on the lack of documented interactions between sea turtles and cutterhead dredges and that the dredge suction is not turned on until the dredge head is in contact with the substrate, effects to sea turtles from the cutterhead dredge are extremely unlikely, and therefore discountable.

Sturgeon and Salmon

Impingement or entrainment in cutterhead dredges may kill or injure sturgeon and salmon. For the fish to be impinged or entrained in the cutterhead dredge, sturgeon or salmon have to be on the bottom. These fish do occur on the bottom, especially sturgeon when engaging in foraging or overwintering behaviors. However, studies indicate that small, juvenile sturgeon less than 0.6 feet fork length need to be within 4.9-6.6 ft. of the cutterhead for there to be any potential entrainment (Boysen and Hoover 2009). The PDC limit the instances where sturgeon or salmon could be in the action area when a cutterhead dredge would be operating, and we do not expect

any early life stage fish (i.e., larvae) to be exposed to cutterhead activities. Based on this information, it is extremely unlikely that a sturgeon or salmon would be impinged or entrained in a cutterhead dredge; therefore, the effects are discountable.

Hopper Dredging

With the use of a hopper dredge, dredged material is raised by dredge pumps through dragarms connected to dragheads which are in contact with the channel bottom. Dredged material is discharged into hoppers built into the vessel. For a project with a hopper dredge component to be eligible for this consultation, a low volume, low suction hopper must be used. There are several characteristics of low volume, low suction hopper dredges that minimize the likelihood of impingement or entrainment of listed species.

Most sea turtles, sturgeon, and salmon are able to escape from the oncoming draghead due to the slow speed that the draghead advances (up to 3 mph or 4.4 feet/second). Interactions with a hopper dredge result primarily from crushing when the draghead is placed on the bottom, or when an animal is unable to escape from the suction of the dredge and becomes stuck on the draghead (i.e., impingement). Entrainment occurs when organisms are sucked through the draghead into the hopper. Mortality most often occurs when animals are sucked into the dredge draghead, pumped through the intake pipe and then killed as they cycle through the centrifugal pump and into the hopper.

Interactions with the draghead can also occur if the suction is turned on while the draghead is in the water column (i.e., not seated on the bottom). Procedures are implemented to minimize the operation of suction when the draghead is not properly seated on the bottom sediments, which reduces the risk of these types of interactions.

Whales

Whales are too large to be susceptible to entrainment or impingement by a hopper dredge. As such, the likelihood that a whale would be impinged or entrained during any of the dredge events is extremely unlikely and therefore, discountable.

Sea Turtles

Studies done by the Corps in 1998 have shown that the suction produced by a low-volume hopper dredges is low and would not be strong enough to fully impinge a sea turtle in a way that would prevent the turtle from freeing itself. The studies were conducted on a previously dead, juvenile green sea turtle, with a 13.5 inch long carapace. The studies confirmed that the small draghead openings prevented the small turtle from becoming entrained. Further, the suction force was low enough that the turtle was easily prodded and moved by a pole despite being impinged by the suction force of the draghead. The results of the studies indicated that a small live turtle would likely have the ability to avoid impingement through its strong swimming abilities and, if impinged, would likely have the ability to easily free itself from impingement by its own efforts. This conclusion is supported by the lack of any observed impingement or entrainment of sea turtles on low-volume hopper dredges, despite the dredge operating several times per year in areas where sea turtles are likely to be present. As such, the low operating speed, low level of suction, the procedure of not turning on the suction until the draghead is properly seated on the

bottom, and the small draghead openings indicate that it is extremely unlikely that a sea turtle would become impinged on or entrained in the low-volume hopper dredge. Thus, effects of impingement or entrainment on sea turtles are discountable.

Sturgeon and Salmon

Sturgeon are vulnerable to interactions with larger hopper dredges. The risk of interactions is related to both the amount of time sturgeon spend on the bottom and the behavior the fish are engaged in (i.e., whether the fish are overwintering, foraging, resting or migrating), as well as the intake velocity and swimming abilities of sturgeon in the area (Clarke 2011). Intake velocities at a typical large self-propelled hopper dredge are 11 feet per second, but less for the low volume hopper dredges. Exposure to the suction of the draghead intake is minimized by not turning on the suction until the draghead is properly seated on the bottom sediments and by maintaining contact between the draghead and the bottom. In general, entrainment of large mobile animals, such as the sturgeon or salmon, is relatively rare. Several factors are thought to contribute to the likelihood of entrainment. One factor influencing potential entrainment is the swimming stamina and size of the individual fish at risk (Boysen and Hoover 2009). Swimming stamina is positively correlated with total fish length. Entrainment of larger sturgeon and salmon, such as the juveniles, subadults, and adults that may occur in the action area, is less likely due to the increased swimming performance and the relatively small size of the draghead opening (3-inches by 5-inches). The PDC limit the instances where sturgeon or salmon could be in the action area when a hopper dredge would be operating, and we do not expect any early life stage fish (i.e., larvae) to be exposed to hopper dredging activities.

Given the precautionary measures ensuring that suction of the draghead is only on when in contact with the bottom, an interaction of a sturgeon or salmon with a hopper dredge is extremely unlikely. Therefore, effects of impingement or entrainment on salmon and sturgeon are discountable.

Impingement or Entrainment Effects from Temporary Intakes on ESA-Listed Species

The PDC require that temporary water intakes related to construction, including pumps to dewater cofferdams, must be equipped with 2 mm wedge wire mesh screening, as documented through the Verification Form process, and must not have an intake velocity greater than 0.5 fps, to prevent impingement or entrainment of any ESA-listed species. The PDC limit the instances where sturgeon or salmon could be in the action area when the temporary intake structure would be operating; with these conditions, we do not expect any eggs or larvae to be exposed to temporary intake structures. At ≤0.5 fps, it would be extremely unlikely for any other fish, sea turtle, or whale to have any risk of impingement or entrainment from a temporary intake structure; therefore, effects are discountable (NMFS & U.S. FWS 2014).

Entanglement Effects on Sea Turtles

The lines within the water column associated with buoys, floats, curtains, etc., have the ability to wrap around sea turtles flippers, while these species forage, migrate, or pursue prey. To minimize this risk, the PDC require that vertical lines be pulled taut, or use methods to promote rigidity (e.g., sheathed or weighted line), in the water column. Lines that are not loose are

extremely unlikely to wrap around flippers. Therefore, the risk of entanglement is discountable. As such, all effects to sea turtles resulting from lines, ropes, or chains considered by this programmatic consultation are discountable.

Entanglement Effects on Whales

Vertical lines set in deeper water have the potential to entangle whales. All lines are required to be taut, or use methods to promote rigidity, which will minimize the risk of entanglement. Additionally, since projects under this consultation will occur in shallower waters where whales are less likely to occur, entanglement is extremely unlikely, and all effects to ESA listed whales will be discountable.

Entanglement Effects on Salmon and Sturgeon

Vertical lines resulting from buoys, floats, curtains, etc. will also not present an entanglement risk to sturgeon or salmon for several reasons. Because sturgeon and salmon are active under lowered light conditions (e.g., foraging in the offshore and coastal marine environment), they can presumably sense the presence of stationary structures in their environment. The maneuverability of sturgeon and salmon will allow them to avoid any lines. Any movements to avoid lines would not affect sturgeon or salmon's ability to migrate and forage, and would be too small to be meaningfully measured or detected. The requirement that all vertical lines be taut or rigid also makes the risk of entanglement extremely unlikely. As such, all effects of in-water lines in the action area will be insignificant and discountable.

Water Quality/Turbidity

PDC

22. In-water offshore disposal may only occur at designated disposal sites that have already been the subject of ESA section 7 consultation with NMFS and where a valid consultation is in place.
23. Any temporary discharges must meet state water quality standards (i.e., no discharges of substances in concentrations that may cause acute or chronic adverse reactions, as defined by EPA water quality standards criteria).
24. Only repair of existing discharge pipes or replacement in-kind allowed; no new construction.
25. Work behind cofferdams, turbidity curtains, or other methods to control turbidity are required when ESA-listed species may be present.

Dredging and excavation operations, installation and removal of piles and cofferdams, fill/stabilization, habitat restoration, survey activities, and in-water demolition activities may all cause sediment to be suspended in the water column. This results in a sediment plume in the water, typically present from the construction site and decreasing in concentration as sediment falls out of the water column as distance increases from the site. The nature, degree, and extent of sediment suspension around a construction site are controlled by many factors including: the particle size distribution, solids concentration, and composition of the suspended material; the type and size of the piles/structure to be repaired, replaced, or demolished; discharge/cutter configuration, discharge rate, and solids concentration of the slurry from the dredge or excavator;

operational procedures used; and the characteristics of the hydraulic regime near the operation, including water composition, temperature, and hydrodynamic forces (i.e., waves, currents, etc.) causing vertical and horizontal mixing (USACE 1983). These increases are expected to be minor and only last for brief periods of time (a few hours to a few days, depending upon the project) before returning to the ambient conditions.

Covered activities also result in temporary water quality effects, such as lowered dissolved oxygen (DO), changes in temperature, and addition of pollutants which may interrupt the basic life history functions of aquatic species and contribute to the reduced productivity of fishery resources. Reductions in water quality can impair and limit the ability of aquatic organisms to grow, feed, and reproduce (Deegan and Buchsbaum 2005; Johnson *et al.* 2008). Changes in the water velocity, volume, temperature, and chemical constituents are all impacts on water quality as well as habitat.

Dredging

Suspended sediment levels from conventional mechanical clamshell bucket dredging operations range from 105 mg/L in the middle of the water column to 445 mg/L near the bottom (210 mg/L, depth-averaged) (USACE 2001). A study by Burton (1993) measured turbidity levels 500, 1,000, 2,000, and 3,300 feet from dredging sites in the Delaware River and were able to detect turbidity levels between 15 mg/L and 191 mg/L up to 2,000 feet from the dredge site. Based on these analyses, elevated suspended sediment levels of up to 445 mg/L may be present in the immediate vicinity of the clamshell bucket, and suspended sediment levels of up to 191 mg/L could be present within a 2,000-foot radius from the location of the clamshell dredge.

Based on a conservative total suspended sediment (TSS) background concentration of 5.0 mg/L, modeling results of cutterhead dredging indicated that elevated TSS concentrations (i.e., above background levels) would be present throughout the bottom six feet of the water column for a distance of approximately 1,000 feet (USACE 1983). Based on these analyses, elevated suspended sediment levels are expected to be present only within a 1,000-foot radius of the location of the cutterhead dredge. Turbidity levels associated with cutterhead dredge sediment plumes typically range from 11.5 to 282.0 mg/L with the highest levels detected adjacent to the cutterhead dredge and concentrations decreasing with greater distance from the dredge (Nightingale and Simenstad 2001).

Near-bottom turbidity plumes caused by small hopper dredges may extend approximately 2,300 to 2,400 feet downcurrent from either side of the dredge, and approximately 1,000 feet behind the dredge the two plumes merge into a single plume (USACE 1983). Suspended solid concentrations may be as high as several tens of parts per thousand (ppt; grams per liter) near the discharge port and as high as a few parts per thousand near the draghead. In a study done by Anchor Environmental (2003), nearfield concentrations ranged from 80.0-475.0 mg/L. Turbidity levels in the near-surface plume appear to decrease exponentially with increasing distance from the dredge due to settling and dispersion, quickly reaching concentrations less than one ppt. Studies also indicate that in almost all cases, the vast majority of resuspended sediments resettle close to the dredge within one hour, and only a small fraction takes longer to resettle (Anchor Environmental 2003).

Pile Installation and Removal

The installation and removal of piles for bridge, dock, pier, and waterway access, and slope stabilization projects will disturb bottom sediments and may cause a temporary increase in suspended sediment in the action area. Using available information collected from a project in the Hudson River, we expect pile driving activities to produce TSS concentrations of approximately 5.0 to 10.0 mg/L above background levels within approximately 300 feet of the pile being driven (FHWA 2012). Using a clamshell to extract piles allows sediment attached to the pile to move vertically through the water column until gravitational forces cause it to slough off under its own weight. The small resulting sediment plume is expected to settle out of the water column within a few hours.

Fill and Disposal Activities

The PDC state that projects with offshore disposal are only eligible for consultation using the Verification Form if we have an existing consultation in effect with the U.S. Army Corps of Engineers (USACE) or Environmental Protection Agency (EPA) for the disposal site(s) proposed for use (e.g., Eastern Long Island Sound disposal site). The disposal site is considered part of the action area and the PDC apply to the dredge disposal area for it to be eligible for the Program.

Projects that include depositing fill incidental to covered actions, such as riprap, scour countermeasures, bridge abutments, demolition, and disposal of dredge material are considered here. Information on the turbidity associated with the deposition of fill is limited. However, information is available from beach nourishment projects. We can use the beach nourishment data as a proxy to apply a range of potential turbidity levels that may be experienced in nearshore environments during fill operations. As most fill activities associated with transportation projects are likely to occur in nearshore and riverine environments similar to beach nourishment, we expect turbidity levels to be consistent with beach nourishment due to similarities in operations and physical aspects of the aquatic environment.

Wilber *et al*. (2006) reported that elevated TSS concentrations associated with the active beach nourishment site were limited to within 1,312 feet of the discharge pipe in the swash zone (defined as the area of the nearshore that is intermittently covered and uncovered by waves), while other studies found that the turbidity plume and elevated total suspended sediment levels are expected to be limited to a narrow area of the swash zone up to 1,640 feet down current from the discharge pipe (Burlas *et al*. 2001). Based on this and the best available information, turbidity levels created by the fill operations along the shoreline are expected to be between 34.0-64.0 mg/L; limited to an area approximately 1,640 feet down current from the discharge pipe; and, are expected to be short term, only lasting several hours.

The release of effluent during the dewatering of dredged or excavated sediment may temporarily increase turbidity and/or suspended sediments in the receiving waterbody. However, the PDC require that turbidity producing work occur behind cofferdams, turbidity curtains, or other methods to control turbidity. Therefore, prior to the effluent entering the receiving waterbody, any remaining sediment in the discharge water will be trapped and able to settle out of suspension, thereby avoiding exposure of listed species to elevated turbidity and suspended

sediment levels.

Effects to ESA-Listed Species from Decreased Water Quality/Increased Turbidity

Whales

No information is available on the effects of TSS on right and fin whales. Whales breathe air, and thus are not subject to the same potential respiratory effects of high turbidity as fish. In whales, many pollutants are not absorbed through sensitive gill structures, which are present in listed fish species, or during development phases, as is the case for fish. TSS is most likely to affect whales if a plume causes a barrier to normal behaviors. Based on the turbidity producing activities discussed above, the maximum extent or turbidity plumes would be 2,400 feet; however, the PDC require that a project eligible for consultation under this Program maintain a zone of passage with suitable habitat. If our section 7 biologist reviewing the Verification Form believes a project may restrict passage, then the project must undergo individual consultation. Although it is extremely unlikely that whales would be present in the action area, if whales were present during project operations they may avoid interacting with a sediment plume by swimming around it, and any such avoidance would be so minor a movement as to be too small to be meaningfully measured or detected, and is therefore insignificant and discountable.

We do not expect temporary increases in turbidity or a reduction in water quality associated with projects under the Program to affect whale prey (i.e., copepods, small schooling fish, krill), as the areas where whales would be feeding on these species tend to be pelagic and far from shore and thus the likelihood of a plume from an activity under this Program project overlapping these areas is very low. In the case of offshore dredge disposal, the discharge of dredge material would likely have ephemeral effects given prevailing currents that would rapidly disperse any sediment plumes at depths where the essential foraging features are not present (NMFS 2015). Based on this information, the effects of reduced water quality and suspended sediment resulting from pile driving, dredging, or dredge material disposal activities on whales are extremely unlikely; therefore, effects to whales from turbidity related to activities under the four project types discussed above are insignificant and discountable.

Sea Turtles

Limited information is available on the effects of increased turbidity on juvenile and adult sea turtles. Sea turtles breathe air, and thus are not subject to the same potential respiratory effects of high turbidity as anadromous fish. Increased turbidity is most likely to affect sea turtles if a plume causes a barrier to normal behaviors or if sediment settles on the bottom affecting sea turtle prey. Based on the turbidity producing activities discussed above, the maximum extent or turbidity plumes would be 2,400 feet. However, to be eligible for the Program, the PDC require that a zone of passage with appropriate habitat for the behaviors the species is carrying out in the project area be maintained. If our section 7 biologist reviewing the Verification Form believes that a project may restrict passage, then the project must undergo individual consultation. In addition, the PDC require turbidity causing work to use cofferdams, turbidity curtains, or other methods to control turbidity. As sea turtles are highly mobile, they are likely to be able to avoid any sediment plumes caused by the activities authorized under the Program. Any minor movement to avoid a sediment plume will be too small to be meaningfully measured or detected,

and is therefore, insignificant.

Impaired water quality can affect sea turtles through the reduction of their forage base; however, any far field effects of sedimentation will be temporary and minimal, and benthic resources are likely only to be affected if turbidity levels rise above 390 mg/L (EPA 1986). The primary prey items of leatherback sea turtles are jellyfish, which occur in the water column; we do not expect jellyfish to be affected by any of the turbidity causing activities mentioned above. The PDC require any project directly affecting SAV (the primary forage of green sea turtles) to go through individual consultation. Kemp's ridley and loggerhead sea turtles routinely feed on benthic shellfish and crustaceans, and these prey species are expected to avoid or uncover themselves from any of the short-term turbidity producing projects described above. Therefore, all effects to sea turtle forage items are extremely unlikely, and therefore, discountable.

Sturgeon and Salmon

Studies of the effects of turbid waters on fish suggest that concentrations of suspended solids can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton 1993). A literature review by Burton (1993) demonstrated that lethal effects on fish due to turbid waters can occur at levels between 580 mg/L to 700,000 mg/L, depending on the species. Studies on striped bass (an anadromous species) showed that prespawners did not avoid concentrations of 954 to 1920 mg/L to reach spawning sites (Summerfelt and Moiser 1976 and Combs 1979 in Burton 1993). While there have been no directed studies on the effects of suspended solids on Atlantic and shortnose sturgeon or Atlantic salmon, sturgeon juveniles and adults are often documented in turbid water (Dadswell *et al*. 1984). Based on the available information, we assume that Atlantic and shortnose sturgeon and Atlantic salmon are at least as tolerant to suspended sediment as other estuarine fish such as striped bass, and will be able to swim through or around a sediment plume without experiencing adverse effects (the PDC require that a zone of passage with appropriate habitat to support the movement of these species through the project area be maintained).

Projects that include work that may affect spawning sturgeon or salmon or their eggs and larvae are not eligible for this program. Therefore, no spawning adults or early life stages will be exposed to effects of the actions considered here. In addition, the PDC require turbidity producing work to use cofferdams, turbidity curtains, or other methods to control turbidity. As turbidity levels from dredging and other in-water construction activities are anticipated to be below adverse effect thresholds to all post-larval life stages, all effects to Atlantic sturgeon, shortnose sturgeon, and Atlantic salmon are extremely unlikely. Although the threshold for effects to benthic resources (390 mg/L) is slightly below the expected levels from some of the activities discussed above (≤475 mg/L), levels are expected to drop rapidly with increasing distance from the work site due to settling and dispersion. Given the information and PDC in place, effects to sturgeon, salmon, and their forage base will be insignificant or discountable.

Atlantic and shortnose sturgeon and Atlantic salmon have similar sensitivities to certain water quality parameters. DO levels below 4.0 mg/L and temperatures above 28°C may have deleterious effects on certain life stages of sturgeon and salmon, particularly upon prolonged exposure. The uptake of heavy metals, other chemicals, and/or areas where low dilution occurs (e.g., low flow areas where mixing zones may not diffuse rapidly) may also effect these species.

The release of effluent with altered temperatures, low DO, and chemical constituents that differ from the ambient water body have the potential to affect migration, foraging, and other behaviors. Both water quantity and quality can greatly affect the usable zone of passage within a channel (Haro *et al*. 2004). In freshwater habitats of the Greater Atlantic Region and northeastern U.S., the temperature regimes of cold-water fish, such as salmon, may be exceeded as a result of some discharges, leading to local extirpation of the species.

Certain FHWA transportation activities may result in minor and temporary impacts to water quality within the action area, only lasting for minutes or hours before returning to ambient conditions. Throughout the Greater Atlantic Region, state water quality standards are promulgated to prevent discharges from creating or contributing to in-water conditions that may negatively effect listed species, their prey, and their habitat. Although transportation activities covered under the Program may lead to temporary reductions in water quality, the implementation of the PDC coupled with FHWA/state DOT and their partners' adherence to state water quality standards (which have been rigorously set by EPA using the *Guidelines for Deriving Numeric National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*) for construction, dredging, and disposal/discharge activities, will result in effects to listed species and their habitats that cannot be meaningfully measured, and thus are insignificant.

Habitat Alteration

PDC

26. Minimize all new waterward encroachment and permanent fill.
27. In Atlantic salmon critical habitat, replaced culverts must be constructed at a minimum of 1.2 bankfull width (BFW).
28. In Atlantic salmon critical habitat, no culvert end extensions, invert line culvert rehabilitation, or slipline culvert rehabilitation may occur.

Effects to ESA-Listed Species from Habitat Alteration

All of the project activities covered by this programmatic consultation have some potential to affect ESA-listed species' habitat. Several PDC are in place to limit disturbance of important habitat in addition to other measures to limit the extent of activity scope, thus reducing the extent of potential habitat alteration. The PDC also state that if it is possible for ESA-listed species to pass through the action area, passage with appropriate habitat for ESA-listed species (e.g., depth, water velocity, etc.) must be maintained (i.e., physical or biological stressors such as turbidity and sound pressure must not create a barrier to passage). Therefore, habitat impacts from temporary biological stressors and permanent physical structures are extremely unlikely to affect ESA-listed species, and are discountable.

Effects to Spawning and Overwintering Areas

Designated Atlantic sturgeon and Atlantic salmon critical habitat provide overlap with all of the rivers where we expect shortnose sturgeon to spawn. The PDC provide TOY windows that protect sturgeon and salmon spawning and early life stage development, as well as shortnose sturgeon overwintering behaviors. The PDC also prohibit activities that have the potential to affect the PBFs necessary for Atlantic sturgeon spawning (PBF 1) and Atlantic salmon spawning

and rearing (PBFs 1-7). It is possible for an activity to occur in shortnose overwintering habitat when the habitat is not being used for overwintering (the dates vary by geographic area); however, we do not expect any project under this Program to have a potentially adverse effect on shortnose sturgeon's use of overwintering habitat. If FHWA/state DOT were to submit a Verification Form for a project that our section 7 biologist believed might adversely affects shortnose sturgeon's future use of overwintering habitat, the project would have the potential to violate PDC l, and would therefore require individual consultation. With these protections in place, we expect all effects to sturgeon and salmon spawning and shortnose overwintering habitats to be extremely unlikely, and therefore, discountable.

Foraging Habitat Removal from Dredging

Dredging activities have the potential to affect sturgeon, salmon, and juvenile green, loggerhead and Kemp's ridley sea turtle foraging habitat. We do not anticipate any effects to whale, leatherback (jellyfish) or adverse effects to adult green sea turtle (submerged aquatic vegetation) foraging habitat.

The PDC limits dredging in Atlantic sturgeon and Atlantic salmon critical habitat to maintenance dredging; and the only new dredging allowed outside of Atlantic sturgeon and salmon critical habitat are one-time dredge events (e.g., burying a utility line) and minor ($\leq$ 2 acres) expansions of areas already subject to maintenance dredging (e.g., marina/harbor expansion). Dredging (both in and outside of critical habitat rivers) will mainly involve work in existing harbors/marinas, shipping channels, and shipping terminals. Sturgeon, salmon, and loggerhead and Kemp's ridley sea turtles may opportunistically forage in the substrate of these areas, but they make up a small portion of the available foraging habitat (both in and outside of critical habitat rivers), and depending on the dredge frequency, may be available for foraging between dredge cycles. Studies reviewed by Wilbur and Clarke (2007) demonstrate that benthic communities in temperate regions occupying shallow waters with a combination of sand, silt, or clay substrate reported recovery times between 1-11 months after dredging. Thus, we expect benthic communities to recover in less than one year. Only areas of with the highest rates of shoaling need to be maintenance dredged every year, so many dredged areas will be intermittently accessible to sturgeon, salmon, and sea turtles. Therefore, given that areas impacted by maintenance dredging represent a small portion of available foraging habitat for ESA-listed species, and that some of those impacted areas will still be intermittently available for foraging between dredge cycles, effects from the loss of foraging habitat from maintenance dredging will be too small to be meaningfully measured or detected and are insignificant.

Foraging Habitat Displacement and Shading from Pile-Supported Structures and Fill

The placement of structures such as pilings and piers, cofferdams, as well as shoreline fill and structures such as bulkheads, may displace or shade available benthic habitat throughout the action area. Therefore, foraging habitat for sturgeon (including Atlantic sturgeon critical habitat, PBF 2), salmon, and juvenile green, loggerhead, and Kemp's ridley sea turtles could be affected. However, restrictions on these activities are incorporated into the Program, which minimizes the potential for effects to benthic habitat serving as foraging habitat for listed species, such as excluding activities that directly affect SAV. Similarly, there are restrictions for these activities in potential spawning areas for salmon and sturgeon.

Structures involving pile placement and shoreline fill will occur in nearshore environments (i.e., structures are typically attached to terrestrial properties), and are often in extremely shallow, intertidal areas. Under this Program, new pile-supported structures are limited to ≤50 piles and must not result in the net increase of commercial vessels. Associated shading (i.e., under piers, docks, floats) may reduce benthic prey and forage items that depend on light and photosynthesis for primary production in the aquatic system by limiting their access to light and resources essential to growth. Nearshore waters where structures and fill will be located are not known to provide optimal foraging for large whales, as they forage in marine waters where we do not expect these types of activities to occur. Nearshore environments may only provide opportunistic foraging to sturgeon and sea turtles outside of SAV beds, as such, ample habitat will remain available for listed species to opportunistically forage.

Because we expect habitat displacement and shading permitted under this Program to be limited to work at existing crossings, docks, floats or minor expansions to existing commercial facilities in primarily shallow and/or intertidal waters, we anticipate all effects on listed species foraging above baseline conditions to be too small to be meaningfully measured or detected, and therefore, insignificant. If our section 7 biologist believes a project may have an individual or cumulative effect that would adversely affect ESA-listed species foraging beyond levels that are insignificant or discountable, that project would have the potential to violate PDC 2, and would therefore require individual consultation.

Effects to Passage

Shoreline structures and fill generally do not impede the passage of mobile ESA-listed species. In cases where passage is diverted, these areas are relatively small compared to the open and available habitat within the action area. Even with the addition of projects funded, authorized, or carried out by FHWA in the foreseeable future, the limited scope and area of the activities is relatively small compared to the available habitat in the action area that serves as productive benthic habitat for listed species and any reductions in habitat availability would be too small to detect. The PDC also state that if it is possible for ESA-listed species to pass through the action area, passage with appropriate habitat for ESA-listed species (e.g., depth, water velocity, etc.) must be maintained (i.e., physical or biological stressors such as turbidity and sound pressure must not create a barrier to passage).

However, stream crossings can reduce or eliminate upstream and downstream fish passage through improperly placed or slip-lined culverts at road crossings. Improperly designed stream crossings can permanently adversely affect aquatic organisms by blocking access to spawning, rearing, and nursery habitat from perched culverts constructed with the bottom of the structure above the level of the stream, and hydraulic barriers to passage are created by undersized culverts which constrict flow and create excessive water velocities (Evans and Johnston 1980; Belford and Gould 1989; Clancy and Reichmuth 1990; Furniss *et al*. 1991; Jackson 2003). Smooth-bore liners made from high density plastic can greatly increase flow velocities through the passage. The PDC require replaced culverts to be constructed at a minimum of 1.2 BFW and that no culvert end extensions, invert line culvert rehabilitation, or slipline culvert rehabilitation occur in Atlantic salmon habitat. With these measures in place, all effects to listed species passage from culvert replacement are cannot be meaningfully measured, and thus are insignificant.

Vessel Traffic

PDC

29. Maintain project vessel speed limits below 10 knots and dredge vessel speeds of 4 knots maximum, while dredging.
30. Maintain a 150-foot buffer between project vessels and ESA-listed whales and sea turtles (1,500 feet for right whales) and while dredging, at least a 300-foot buffer between dredge vessels and ESA-listed whales and sea turtles (1,500 feet for right whales).
31. The number of project vessels must be limited to the greatest extent possible, as appropriate to size and scale of the project.
32. A project must not result in the permanent net increase of commercial vessels.

Vessel strikes are a concern for all of our listed species in the action area. The factors relevant to determining the risk to these species from vessel strikes may be related to the number, size, and speed of the vessels, as well as the navigational clearance (i.e., depth of water and draft of the vessel) and the behavior of individuals in the area (e.g., foraging, migrating, overwintering, etc.). Vessel traffic may increase during bridge/culvert construction and dredging activities as authorized under this programmatic ESA section 7 consultation.

Effects to ESA-Listed Species from Vessel Interaction

The PDC require that eligible projects maintain a buffer of 150 feet between all project vessels and ESA-listed whales and sea turtles (with 1,500 feet required for right whales) and that these vessels operate at speeds of less than 10 knots. Additionally, all dredges must remain 300 feet away from ESA-listed whales and sea turtles and operate at speeds of 4 knots maximum. These requirements are designed to minimize the likelihood of interactions between vessels and listed species. FHWA will also limit the number of project vessels to the greatest extent possible, as appropriate to size and scale of project. FHWA will report the number of project vessels on the Verification Form for GARFO review.

As the activities considered in this programmatic ESA section 7 consultation involve project (construction) vessels that are located near shore and involve minor and temporary increases in vessel traffic, any increase in the risk of interaction with ESA-listed species cannot be meaningfully detected, and is therefore insignificant. Projects involving offshore disposal of dredged material are only eligible under the Program if there is an existing consultation that considers the effects of that disposal on the relevant listed species and critical habitat (i.e., a consultation with USACE or EPA on the designation and use of the particular disposal site). In that case, FHWA must require all of the ESA conditions outlined in those consultations. When we consider the effects of increases in vessels added to the baseline as a result of bridge/slope stabilization work and the construction of new docks, piers, and waterway access projects, we still expect that increased risk of interactions between vessels and ESA-listed species will not be able to be meaningfully measured or detected, and is therefore insignificant.

Critical Habitat Effects Analysis

An activity is not likely to adversely affect critical habitat if all effects[7] are wholly beneficial or the effects are insignificant (so small that they cannot be meaningfully measured, evaluated, or detected) and/or discountable (the effects are extremely unlikely to occur). For critical habitat, all potential effects of the action are analyzed in a similar manner to how the effects to individuals of the species are analyzed.

The following analysis determined if/where the action area[8] overlaps with a portion of one or more critical habitat units and subsequently, which PBFs are present within the action area and which parts of the activity under the Program may affect one or more of the features. Effects to each PBF take into account the feature's physical or biological components as well as the feature's conservation function, as described in the rule for critical habitat designation. We also consider the effects to each PBF in light of the value each one provides to the conservation of the species in the action area. The effects of the action on the species' ability to access the feature, temporarily or permanently, or on the ability for the feature to be developed over time, have also been considered. Although the action area for this Program is widespread throughout the range of species with critical habitat in our region, we qualitatively analyzed the effects of the types of projects eligible under this Program on the PBFs for each species' critical habitat. Based on the information on the activities included under this Program, all effects to the features, inclusive of their conservation function, and in light of their value to the species in the area, are insignificant or discountable.

North Atlantic Right Whale Critical Habitat

Table 7. North Atlantic right whale critical habitat physical and biological features

1.	The physical oceanographic conditions and structures of the Gulf of Maine and Georges Bank region that combine to distribute and aggregate *Calanus finmarchicus* for right whale foraging, namely prevailing currents and circulation patterns, bathymetric features (basins, banks, and channels), oceanic fronts, density gradients, and temperature regimes.
2.	Low flow velocities in Jordan, Wilkinson, and Georges Basins that allow diapausing *C. finmarchicus* to aggregate passively below the convective layer so that the copepods are retained in the basins.
3.	Late stage *C. finmarchicus* in dense aggregations in the Gulf of Maine and Georges Bank region.
4.	Diapausing *C. finmarchicus* in aggregations in the Gulf of Maine and Georges Bank region.

We do not expect any projects will affect North Atlantic right whale critical habitat PBFs 1-4, because the activities covered under the Program occur in the nearshore areas and there is no pathway for effects to features of right whale critical habitat. Therefore, right whale critical

[7] "effects of the action" includes direct and indirect effects of the proposed action itself, plus effects of any interrelated/interdependent activities. Consider effects not only during the action, but any effects that extend beyond the temporal scope of the action (that is, effects that will continue once the activity under consultation is complete).

[8] The action area is the geographical area in which all direct and indirect effects of the action occur; it is not necessarily limited to the immediate area involved in the action.

habitat will not be discussed further.

Atlantic Salmon Critical Habitat

Table 8. Atlantic salmon critical habitat physical and biological features

Atlantic Salmon Spawning and Rearing Primary Constituent Elements	
1.	Deep, oxygenated pools and cover (e.g., boulders, woody debris, vegetation, etc.) near freshwater spawning sites, necessary to support adult migrants during the summer while they await spawning in the fall.
2.	Freshwater spawning sites that contain clean, permeable gravel and cobble substrate with oxygenated water and cool water temperatures to support spawning activity, egg incubation, and larval development.
3.	Freshwater spawning and rearing sites with clean, permeable gravel and cobble substrate with oxygenated water and cool water temperatures to support emergence, territorial development, and feeding activities of Atlantic salmon fry.
4.	Freshwater rearing sites with space to accommodate growth and survival of Atlantic salmon parr.
5.	Freshwater rearing sites with a combination of river, stream, and lake habitats that accommodate parr's ability to occupy many niches and to maximize parr production.
6.	Freshwater rearing sites with cool, oxygenated water to support growth and survival of Atlantic salmon parr.
7.	Freshwater rearing sites with diverse food resources to support growth and survival of Atlantic salmon parr.
Atlantic Salmon Migration Primary Constituent Elements	
8.	Freshwater and estuary migratory sites free from physical and biological barriers that delay or prevent access of adult salmon seeking spawning grounds needed to support recovered populations.
9.	Freshwater and estuary migration sites with pool, lake, and instream habitat that provide cool, oxygenated water and cover items (e.g., boulders, woody debris, and vegetation) to serve as temporary holding and resting areas during upstream migration of adult salmon.
10.	Freshwater and estuary migration sites with abundant, diverse native fish communities to serve as a protective buffer against predation.
11.	Freshwater and estuary migration sites free from physical and biological barriers that delay or prevent emigration of smolts to the marine environment.
12.	Freshwater and estuary migration sites with sufficiently cool water temperatures and water flows that coincide with diurnal cues to stimulate smolt migration.
13.	Freshwater migration sites with water chemistry needed to support sea water adaptation of smolts.

The terms of the Program exclude any project that may affect Atlantic salmon critical habitat PBFs 1-7 (Atlantic salmon spawning or rearing habitat). It is possible that projects occurring under the Program could overlap with PBFs 8-13 (Atlantic salmon migration critical habitat) and are analyzed below.

PBFs 8 and 11

The PDC that requires that no work will occur in the tidally influenced portion of rivers/streams where Atlantic salmon presence is possible from April 10 through November 7 is designed to prevent in-water stressors from affecting migrating salmon adults and smolts. This applies to all

areas of critical habitat where PBFs 8 and 11 occur. By limiting in-water work to November 8 through April 9, any temporary physical or biological barrier (e.g., turbidity plume, ensonified area from pile driving, etc.) would be extremely unlikely to prevent or delay the migration of salmon adults or smolts.

Some in-water work under this Program may result in the permanent alteration of habitat that will potentially directly or indirectly affect salmon critical habitat regardless of the time of year the work occurs (e.g., bridges, culverts, docks/piers, slope stabilization, vessel traffic). However, the PDC severely limit the scope of permanent effects to the habitat of ESA-listed species. To be eligible for consultation under the Program, a zone of passage with appropriate habitat for ESA-listed species (e.g., depth, water velocity, etc.) must be maintained (i.e., physical or biological stressors must not create a barrier to passage). Also, of particular importance to salmon passage, the habitat alteration PDC require that within Atlantic salmon critical habitat, the minimum width of replaced culverts must be 1.2 bankfull width (BFW) and no culvert end extensions, invert line culvert rehabilitation, and/or slipline culvert rehabilitation may occur. Furthermore, no project will result in permanent changes to water temperature, flow, salinity, or dissolved oxygen levels, and the Program does not allow new construction of discharge pipes or permanent surface water withdrawal/intakes or diversions. Lastly, the project must not result in any permanent net increase in vessels operating in the action area. With these PDC in place, we expect any effects of projects covered by this Program on the migration of salmon adults and smolts to be too small to be meaningfully measured or detected.

In sum, the PDC required by this Program restrict in-water work in the areas where PBFs 8 and 11 are present to a time of year when we expect salmon presence to be extremely unlikely. The PDC also greatly limit the permanent impact of projects on migratory habitat by requiring that a zone of passage be maintained and that projects have no permanent effects above baseline conditions to water quality parameters that have the potential to affect salmon passage. With these PDC in place, we expect the effects of any habitat alteration resulting from projects covered by this Program on the ability of PBFs 8 and 11 to provide their conservation function to the action area to be too small to be meaningfully measured, detected, or evaluated. Therefore, all effects are insignificant.

PBF 10

Adult alewives, blueback herring, and American shad (three unlisted anadromous clupeid species) all move through the action area during their migration and provide important buffers to Atlantic salmon predation at different stages of salmon's life cycle. Alewives, American shad, and bluebacks make upstream migrations into Atlantic salmon critical habitat in the spring (typically May and June). Juvenile shad, herring, and alewives then emigrate to the ocean in the late summer and fall (Fay *et al*. 2006). Therefore, the PDC restricting in-water work to November 8 through April 9 also serves to protect the migration of these species that serve as key predatory buffers. Similarly, all of the PDC described above to limit the permanent impacts of projects under this Program on salmon habitat and migration (i.e., PBFs 8 and 11), will double as protections to migratory passage of other anadromous species. With these protections in place, we do not expect any work under this Program to have a measurable or detectable effect on populations of diverse native fish communities that serve as a protective buffer against salmon predation. Therefore, any effects of projects covered by this Program on the ability of PBF 10 to

provide its conservation function to the action area will be insignificant.

PBFs 9, 12, and 13

As previously noted, U.S. FWS has jurisdiction of Atlantic salmon in the freshwater portion of its range (except for work on hydropower dams, which are not covered under this Program). Therefore, it is unlikely that a project potentially affecting PBF 13 (freshwater migration sites) would fall under our jurisdiction and this Program. Furthermore, several PDC are in place to prevent adverse effects to PBFs 9 and 12. Most importantly, the PDC require that work will result in no or only temporary/short-term changes in water temperature, water flow, salinity, or dissolved oxygen levels. The Program does not allow new construction of discharge pipes or permanent surface water withdrawal/intakes or diversions. Short-term, temporary changes (e.g., from construction related turbidity) would only be allowed under the Program between November 8 and April 10, when smolts are extremely unlikely to be present. With these PDC in place, any effects of projects covered by this Program on the ability of PBFs 9, 12, and 13 to provide their conservation function to the action area will be extremely unlikely to occur, and are therefore, discountable.

Atlantic Sturgeon Critical Habitat

Table 9. Atlantic sturgeon critical habitat physical and biological features

1.	Hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0 to 0.5 parts per thousand range) for settlement of fertilized eggs, refuge, growth, and development of early life stages.
2.	Aquatic habitat with a gradual downstream salinity gradient of 0.5 up to as high as 30 parts per thousand and soft substrate (e.g., sand, mud) between the river mouth and spawning sites for juvenile foraging and physiological development.
3.	Water of appropriate depth absent physical barriers to passage (e.g., locks, dams, thermal plumes, turbidity, sound, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support: (1) unimpeded movement of adults to and from spawning sites; (2) seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary; and (3) staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (e.g., at least 1.2 meters) to ensure continuous flow in the main channel at all times when any sturgeon life stage would be in the river.
4.	Water, between the river mouth and spawning sites, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support: (1) spawning; (2) annual and interannual adult, subadult, larval, and juvenile survival; and (3) larval, juvenile, and subadult growth, development, and recruitment (e.g., 13°C to 26°C for spawning habitat and no more than 30°C for juvenile rearing habitat, and 6 milligrams per liter dissolved oxygen or greater for juvenile rearing habitat).

The PDC exclude any project that may affect Atlantic sturgeon critical habitat PBF 1. It is possible that projects under this Program could overlap with PBFs 2, 3, and 4, and thus effects to these PBFs are analyzed below.

PBF 2

Activities included under this Program may have minor and temporary effects (e.g., turbidity, temporary shifts in salinity regimes from construction discharges, etc.), as well as permanent effects (e.g., sediment/habitat removal/disturbance, etc.) on PBF 2 (i.e., gradual downstream salinity gradient of 0.5-30 parts per thousand and soft substrate (e.g., sand, mud) downriver of spawning sites). We expect that eligible projects will cause only temporary increases in turbidity and/or temporary shifts in salinity due to the small size and short temporal scale of project construction, during which time these effects may occur. Projects included under this Program will not produce permanent increases in turbidity or shifts in salinity. Because the PDC limit the scope and scale of project types, any temporary effects to PBF 2 resulting from turbidity or salinity shifts will be too small to be meaningfully detected and are therefore insignificant.

Project activities, however, may permanently remove/alter sediments, thus permanently affecting PBF 2. To determine if a project eligible for inclusion in this Program will not produce negative effects to PBF 2 by permanently altering or removing soft sediment habitat, the action agency must consider effects to the conservation function of the PBF in context of the entire action area, and determine how alteration/removal of the feature will affect the species' ability to use it in the present or future.

If a project may permanently alter/remove sediment, but the effect of the alteration on the ability of the PBF to continue to provide its conservation function in the action area is so small that it cannot be meaningfully measured, detected, or evaluated, then all effects are insignificant. Conversely, if a project will alter/remove sediment, but it is extremely unlikely that the alteration/removal will impact the ability of the PBF to provide its conservation function in the action area, then the effects are discountable. Because projects vary in location and in type, we cannot effectively determine the level of permanent effect of sediment alteration/removal at a programmatic level. Therefore, a determination must be made, on a project-by-project basis, if the effects of permanent alteration/removal of habitat/sediment are insignificant or discountable. If effects are not insignificant/discountable, an individual section 7 consultation will need to be completed.

Additionally, if it is determined that the effects to the features rise above insignificant/ discountable, the action agency will need to complete an individual ESA section 7 consultation. For projects that are eligible under this Program, Verification Forms will be tracked and an annual monitoring report will be completed each year to determine aggregate effects incurred under this Program. Because permanent alteration/disturbance of the features will be tracked on an annual basis, we can verify that all aggregate effects are insignificant and/or discountable.

PBF 3

Several activities included under this Program may produce effects that temporarily or permanently create barriers in the water column, and may negatively affect PBF 3. The PDC limit project scope, and as a result of the action, water depths will not be permanently changed in a way that would restrict passage. During project activities, Atlantic sturgeon may encounter ensonified areas created by pile driving or other construction activities, turbidity plumes, dredge equipment, temporary intake structures and effluent plumes, cofferdams and other structures, and

vessels moving to and from construction sites (no new vessels/boating facilities are allowed under the Program); all which represent temporary barriers within the water column. As detailed in the species effects section, no impingement, entrainment, or entrapment will occur. Because of the ephemeral nature of these barriers that result from construction activities only, and because the PDC limit project size and require that passage with appropriate habitat (e.g., depth, water velocity, etc.) must be maintained, the ability of Atlantic sturgeon to forage, stage, spawn, rear, and migrate within the waterways will not be inhibited. Thus, although there may be minor and temporary negative effects to PBF 3, all projects included under the Program must maintain an adequate zone of passage so that no project will create barriers that would limit sturgeon's ability to migrate to or from areas within critical habitat rivers necessary for foraging, staging, spawning, rearing, etc. Therefore, any effects on the value of PBF 3 to the conservation of the species will be too small to be meaningfully detected, and therefore insignificant.

Permanent barriers caused by completed construction projects, such as bridges and culverts spanning a waterway, also must adhere to PDC that limit project scope and require the maintenance of passage with appropriate habitat. Since completed projects will not permanently change water depths in a manner that will alter passage of Atlantic sturgeon, any permanent effects on the ability of PBF 3 to provide its conservation function to the action area will be too small to be detected or measured and are insignificant.

PBF 4

Projects included under this Program may temporarily affect PBF 4. The PDC exclude work that has the potential to permanently alter water temperature, flow, salinity, or dissolved oxygen levels. Therefore, we expect effects on water quality as described in PBF 4 to be temporary, and thus create effects on the value of PBF 4 to the conservation of the species that are too small to be meaningfully measured or detected, and are therefore, insignificant.

Summary of Effects

In summary, all effects to PBF 1-4 are either prohibited (PBF 1) or insignificant/discountable (2-4). As such, all effects of the action are not likely to adversely affect critical habitat designated for Atlantic sturgeon.

Project-Specific Section 7 Consultation

We expect that FHWA will authorize, fund, or carry out transportation projects that are outside the scope of this programmatic consultation. FHWA will request consultation on any of those projects that may affect listed species; this programmatic consultation does not impact those projects in any way. The Criteria, SOPs, and this programmatic ESA section 7 consultation letter outline the process and specify which activities are outside the scope of the Program.

Aggregate Effects and Monitoring

The Program does not have an expiration date, but annual reporting is required and both agencies will review the merits of the program on an annual basis. We expect that individual activities considered under this Program will be one-time events with minimal individual effects; however, over the duration of the program, multiple activities may occur concurrently in the same general

location. Based on our analysis of past numbers and types of projects, limited numbers of overall individual projects will occur throughout distant locations across the region. Over a five-year period, we consulted on approximately 31 projects, which were spread across the region, and likely will not all be occurring at the same time. We must assess the potential for effects that arise from concurrent activities, as well as assess the effects of all activities consulted on under the Program for the potential of aggregate effects in the action area.

Effects from the activities considered in this programmatic consultation may be both temporary and permanent. All effects associated with the activities determined in this programmatic consultation as not likely to adversely affect ESA-listed species are anticipated to have insignificant or discountable effects to shortnose sturgeon, all 5 DPSs of Atlantic sturgeon, the Gulf of Maine DPS of Atlantic salmon, sea turtles, whales, and designated Atlantic salmon, right whale, and Atlantic sturgeon critical habitat in the action area. The general and stressor-specific PDC greatly limit the scope and scale of the projects eligible for this Program. For all actions consistent with the Program, permanent shifts in habitat will be small in scope, and will not measurably limit the availability of appropriate habitat for life functions of listed species, nor will it measurably limit prey resources for these species, and all aggregate effects will be insignificant. Additionally, effects from vessel traffic from multiple activities occurring throughout the action area in the short- and long-term are not expected to increase the risk of a vessel strike in a measurable way, and as such, any effects in the aggregate are insignificant. Activities that may generate shorter-term effects, such as fill placed in aquatic habitat, dredging activities, or turbidity from the activities identified in this consultation are expected to be small in scope, and are individually found to have insignificant and/or discountable effects. Temporary effects are only anticipated to occur during project construction or implementation and are only anticipated to occur over short durations on the order of hours, a few days, or intermittently over a few months. Based on our analysis of these activities, we do not expect that any of these activities, when taken together, will rise to a level where adverse effects may occur, thus any aggregate effects will also be insignificant and/or discountable.

Predicting the exact spatial and temporal occurrences of activities throughout the action area is very difficult; however, to ensure that adverse effects do not occur from ongoing activities over the duration of the Program, you will track activities and the potential for aggregate effects in the future. Each activity potentially eligible for the Program must be reviewed by us via the Verification Form. The Verification Form will contain project information about the proposed activity, location, and allows us to certify that a project is consistent with the Program. You will use these forms to create a log of activities that have been consulted on under the Program throughout the Greater Atlantic Region and provide the log to us on an annual basis. You agreed to track project attributes including: type of activity, latitude and longitude of activity, activity description, impacts to listed species, and dates of the consultation as described in the Annual Reporting spreadsheet. You will provide us with annual reports on all activities under the Program that “may affect, but are not likely to adversely affect” (by activity type and location) that occurred each year. This programmatic concurrence does not apply to FHWA activities that individually or in aggregate are likely to adversely affect a species or its critical habitat through direct or indirect effects to either the species or its habitat. Thus, if information obtained through monitoring, or other sources, indicates that the FHWA actions described in the Program are resulting, individually or in aggregate, in adverse effects to ESA-listed species, this represents new information and reinitiation of consultation would be required.

Conclusion

Based on the analysis that all effects to listed species and critical habitat will be insignificant or discountable, we concur with your determination that FHWA's funding, authorizing, or carrying out of transportation projects of the type describes here and consistent with the associated PDC, is not likely to adversely affect select ESA-listed species or critical habitat under our jurisdiction. Reinitiation of consultation is required and shall be requested by FHWA/state DOT or by us where discretionary federal involvement or control over the project has been retained or is authorized by law and: (a) if new information reveals effects of the project that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) if the identified project is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or (c) if a new species is listed or critical habitat designated that may be affected by the identified project. No take is anticipated or exempted. If there is any incidental take of a listed species, re-initiation is required. Should you have any questions about this correspondence please contact William Barnhill at (978) 282-8460 or by e-mail (William.Barnhill@noaa.gov).

Essential Fish Habitat

NMFS Habitat Conservation Division (HCD) is responsible for overseeing programs related to Essential Fish Habitat (EFH) designated under the Magnuson-Stevens Fishery and Conservation Management Act (MSA) and other NOAA trust resources under the Fish and Wildlife Coordination Act. A programmatic EFH consultation on the proposed action was developed concurrently with this consultation, in accordance with section 305(b)(2) of the MSA (16 U.S.C. 1801, et seq.) and implementing regulations at 50 CFR 600. FHWA/state DOT should continue to follow existing procedures for consulting with GARFO HCD.

Sincerely,

Christopher Boelke
Acting Assistant Regional Administrator
for Protected Resources

ec: Barnhill, Murray-Brown, Boelke – NMFS GARFO
Pirrotta – Integrated Statistics
Yanchik, Santiago – FHWA

Mittelman, Flynn – VOLPE

Attachments (FHWA NLAA Program Criteria, SOPs, Annual Reporting Form)

File Code: H:\Section 7 Team\Programmatic\FHWA\Final Submission-All Tasks

PCTS: NER-2018-14815

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