SFWF – Montauk O&M Facility
In-Water Work

Assessment of Potential Impacts to
Natural Resources from In-Water Work

February 7, 2020

Prepared for:

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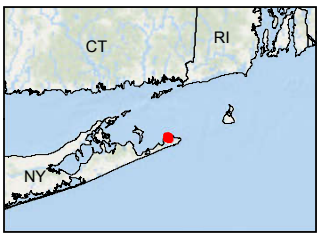
1.0 INTRODUCTION AND PURPOSE

Stantec Consulting Services Inc. (Stantec) was retained by Deepwater Wind South Fork LLC (DWSF) to prepare an assessment of the natural resources that could be affected by in-water work proposed for the Operations and Maintenance Facility (O&M Facility) that will support the operational and maintenance activities necessary during the operation of the South Fork Wind Farm (SFWF). The O&M Facility described in this report is proposed for Montauk Harbor in the Town of East Hampton, New York (Figure 1).

This report is intended to supplement the information provided in the Construction and Operations Plan (COP) submitted to the Bureau of Ocean Energy Management for SFWF, as well as the information provided in Appendix BB1 (Historic Resource Visual Effects Analysis) and Appendix BB2 (Marine Archaeological Resources Analysis) for the O&M Facility.

Stantec completed this desktop review using public information including environmental assessments and permit applications in the project vicinity, to describe current or anticipated conditions and to identify potential environmental concerns associated with the in-water work for the O&M Facility proposed for Montauk.

Stantec also conducted a review of permits issued by New York State Department of Environmental Conservation (NYSDEC) for Lake Montauk and for the specific site proposed for the O&M Facility, and identified several NYSDEC permits for Excavation & Fill in Navigable Waters and Tidal Wetlands (dredging permits) as well as Section 401 Water Quality Certifications. Water Quality Certifications, while issued by the state, are required as part of Section 404 permitting from the US Army Corps of Engineers (USACE). However, when a Section 404 Nationwide Permit is issued to a project, the certification may not be required by NYSDEC due to the project's required adherence to General Conditions for Nationwide Permits as identified by the USACE. Based on these findings, the Project's proposed in-water work is anticipated to require a Section 404 Individual Permit from the USACE and a dredging permit from NYSDEC. A Section 401 Water Quality Certification is also likely required from NYSDEC.



Legend
O & M Facility - Montauk
Maintained Navigation Channel

0 1,000 Feet
(At original document size of 8.5x11)
1:12,000

N

Notes
1. Coordinate System: NAD 1983 UTM Zone 18N
2. Sources: NOAA
3. Background: ESRI World Imagery

Stantec

Project Location
East Hampton
New York

Prepared by GAC on 2019-06-25
Reviewed by JYP on 2019-06-25

Client/Project 195601430
Deepwater Wind South Fork, LLC
South Fork Wind Farm

Figure No.
1

Title
O & M Facility Location Map

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2.0 DESCRIPTION OF ACTIVITY

2.1 OPERATIONS AND MAINTENANCE FACILITY

The only ancillary facility that will be built as an integrated, operational component of the SFWF is the onshore SFWF O&M Facility. The O&M Facility will be used by SFWF staff to prepare and mobilize for offshore maintenance activities, monitor the wind farm, and/or access storage space for spare parts and other equipment to support maintenance activities.

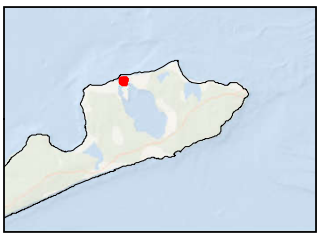
DWSF has currently proposed use of the property owned by Inlet Seafood LLC (Site Owner) for the O&M Facility (Project Area; Figure 2). The Project Area is located off East Lake Drive immediately east of the inlet that connects Lake Montauk to Block Island Sound and the Atlantic Ocean. If the O&M Facility is located here, it could include building(s) that provide office space (a maximum of up to approximately 1,000 square feet), equipment storage space (a maximum of up to approximately 6,600 square feet), a stationary crane for equipment transfer, up to 3 vessel berths for the crew transfer vessels (CTV), as well as accommodations for parking spaces, additional containers for equipment storage, and minor surface improvements.

Dredging activity is described in Section 2.2 and other in-water work is described in Section 2.3. The purpose of the dredging and associated in-water work is to maintain a safe navigational depth to allow CTV access to the O&M facility and so that the quayside bulkhead can adequately support the anticipated loads and proposed dredged depth. The CTV is up to 98 feet (30 meters) in length and requires approximately 10 feet (3 meters) of minimum water depth to safely navigate. The O&M Facility would be located approximately 100 feet from the federal navigation channel that connects Lake Montauk to the Atlantic Ocean (Figure 2).

2.2 DREDGING ACTIVITY

To allow for suitable depths for navigation and berthing, a dredge footprint of up to up to 37,350 ft^2 (3,500 m^2) is anticipated. The proposed project dredge depth within this area is -12 feet mean lower low water (MLLW) with one foot of allowed overdredge. Based on current hydrographic conditions, it is anticipated that the initial dredging activity would dredge and dispose of approximately 9,630 yd^3 (7,350 m^3) of sediment. It is anticipated that the dredge footprint will accumulate approximately two feet of sediment per year, such that maintenance dredging may need to occur on an annual basis. It is anticipated that maintenance dredging would dredge and dispose of approximately 2,748 yd^3 (2,100 m^3) of sediment to maintain the proposed dredge depth of -12 feet MLLW. The most recent information from the Site Owner indicates that water current water depths are approximately -5 feet MLLW.

Dredging is expected to be completed with the use of a barge-mounted crane, excavator or equivalent fitted with a clamshell bucket or potentially the use of a suction-dredging vessel. Dredged materials will be loaded onto land-based dump trucks and transported to adjacent beaches for placement as nourishment material on the adjacent beach and/or dunes. It is our understanding that this practice has been the



Legend

- O & M Facility - Montauk
- Maximum Potential Dredge Area

0 100 Feet

(At original document size of 8.5x11)
1:1,200

N

Stantec

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Sources: NOAA
3. Background: ESRI World Imagery

Project Location
East Hampton
New York

Prepared by GAC on 2019-06-25
Reviewed by JYP on 2019-06-25

Client/Project
Deepwater Wind South Fork, LLC
South Fork Wind Farm

195601430

Figure No.
2

Title
Maximum Potential Dredge Area

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standard for placement of dredged sediments during previous dredge activities at the site. The dredged materials will be tested to confirm it is physically and chemically suitable for placement in these areas. The exact methods and equipment to be used will be determined by the selected contractor. Dredging operations are expected to occur up to 24 hours a day to take advantage of optimal weather and tidal conditions and is anticipated to take up to five months to complete.

2.3 OTHER POTENTIAL IN-WATER ACTIVITY

In addition to dredging, other potential in-water work includes replacement of the quayside bulkhead as well as potential bank stabilization. Fixed and floating docks may also be installed to support the vessel berths, which could include pile installation. Additional piles may be necessary to provide safe berthing conditions (i.e. mooring dolphin).

It is anticipated that the existing bulkhead will require replacement to accommodate the anticipated loads and proposed dredge depth. It is anticipated that approximately 200 linear feet of bulkhead will be oversheeted with steel sheet piles. The oversheeting will be installed no farther than 18” waterward of the existing bulkhead. In addition, the bulkhead will receive a new tie-back system comprised of steel sheet piles and a tie rod system. Steel sheet piles will be installed using a vibratory hammer and the work area will be surrounded by a turbidity curtain to reduce effects from suspended sediments. The exact methods, materials, and equipment to be used will be determined during final design. A dewatering system may be required during bulkhead reinforcement, and any dewatering system will be designed and installed with approved erosion and sediment control measures. Work is expected to occur between 6 AM and 6 PM up to seven days a week and is anticipated to take up to five months to complete, within the same time period as dredging activity.

3.0 SUMMARY OF IMPACT-PRODUCING FACTORS

The site characterization and assessment of potential impacts for the Project is structured consistently with the information presented in the COP for SFWF. As such, Stantec considered the same impact-producing factors (IPF) described in the COP for the SFWF and Section 4 of this document includes the same structure as Section 4 – Environmental Impacts in the COP. For each resource, a description of the affected environment is provided first, followed by a description of the potential impacts for that resource.

The IPF identified for the activities associated with the O&M Facility described in Section 2 are listed in Table 1 and are discussed for each of the relevant resources. A complete description of each IPF is included in Section 4.1 of the COP for SFWF and is not repeated within this document.

Table 1. Summary Impact-producing Factors associated with In-Water Work for the Montauk O&M Facility

Impact-Producing Factor	Water Quality	Coastal and Terrestrial Habitat	Benthic Habitat	Fish and EFH	Commercial Fishing
Seafloor and Land Disturbance	•	•	•	•	•
Sediment Suspension and Deposition	•	•	•	•	•
Noise			•	•	•
Discharges and Releases	•	•	•	•	•
Trash and Debris	•	•	•	•	•
Traffic					•

4.0 ASSESSMENT OF POTENTIAL IMPACTS

4.1 WATER QUALITY

4.1.1 Affected Environment

Existing Water Quality Conditions

Lake Montauk, located on the eastern end of Long Island, NY, is 900-acre tidal embayment that connects to Block Island Sound and the Atlantic Ocean. Historically, Lake Montauk was freshwater but an inlet was created during the late 1920s. This inlet remains in use today and the federal navigation channel is located approximately 100 feet west of the Project Area.

Salinity in Lake Montauk ranges from 28 to 32 parts per thousand and Lake Montauk is subject to semi-diurnal tides (two highs and two lows per day; USACE 2019). Lake Montauk is largely tidally influenced with areas of highest water circulation at the inlet with reported surface currents of greater than 1.5 knots here (USACE 2019). Overall, Lake Montauk is considered a well-mixed estuary in the northern two-thirds and partially mixed in southern third with reported surface currents of less than 0.13 knots (USACE 2019).

The 2014 Lake Montauk Watershed Management Plan (Watershed Plan) describes general water quality conditions (Nelson, Pope, and Voorhis 2014). The Watershed Plan highlights several sources of pollutants (i.e., septic systems and stormwater runoff) and calls for further water quality sampling across Lake Montauk to determine the types and levels of pathogens entering the system. The NYSDEC maintains 29 sampling stations within Lake Montauk, several of which (#14, #15, and #16) are located close to the Project Area. Fecal coliform levels at these three sites show periodic exceedances from 2001-2012. Overall, the sampling results show regular occurrences of fecal coliform levels that exceed thresholds within Coonsfoot Cove, located west of the Project area. Seasonal occurrences of elevated fecal coliform levels between Star Island and the eastern shoreline were also observed. The Project Area itself is located within a permanent Shellfish Closure Area. While this area can have elevated fecal coliform levels, the closure is administrative and due to heavy boat traffic rather than specifically from water quality concerns. There is no site-specific information available on the presence of contaminants in sediments within the Project Area. However, a review of NYSDEC's past permits for dredging work in Lake Montauk or specifically associated with the Site Owner provides some insight. Several historic permits have allowed for the placement of dredge spoils from Lake Montauk and/or the Site Owner's property onto adjacent beaches or as backfill, which indicates that the dredge material met the NYSDEC screening criteria for these uses.

4.1.2 Potential Impacts

Sediment Suspension and Deposition

Dredging and pile driving activities will likely suspend small amounts of sediment within the in-water work area and cause turbidity plumes. During pile driving operations for bulkhead work, a turbidity curtain will

be deployed to reduce further transport of suspended sediments. If a dewatering system is in place, no significant turbidity plumes would be expected during bulkhead operations due to the absence of standing water in the work area. During dredging, plumes will be transported by dominant currents and tidal action but are anticipated to small in spatial coverage and of a short duration (i.e., one or two tidal cycles) due to the coarse nature of the sediment (sands). Based on the review of past permit submittals for sites in Lake Montauk and in the immediate vicinity of the Project Area, it is expected that in-water activities will not result in the significant suspension or movement of containments from disturbed sediments. Project activities are not anticipated to result in any significant changes to existing water pollutants. Appropriate measures will be in place to protect Lake Montauk from fuel or other spills from equipment working over open water.

Discharges and Releases / Trash and Debris

During construction and operations of the O&M Facility, sanitary and other waste fluids, trash, and miscellaneous debris will be generated but properly managed in accordance with federal and state laws. Vessels will comply with regulatory requirements for management of onboard fluids and fuels, including prevention and control of discharges and accidental spills. Vessels will be navigated by trained, licensed vessel operators who will adhere to navigational rules and regulations, and vessels will be equipped with spill handling materials. Accidental spill or release of oils or other hazardous materials will be managed through the Oil Spill Response Plan for the SFWF (Appendix D of the COP). DWSF and its contractors will also maintain SPCC plans during construction. The likelihood of discharges and releases is expected to be low and impacts to water quality are unlikely.

4.2 COASTAL AND TERRESTRIAL HABITAT

4.2.1 Affected Environment

Formerly a freshwater system, Lake Montauk has been estuarine since the inlet was opened in the 1920s. Eelgrass (*Zostera marina*), a coastal submerged aquatic grass, was historically well-distributed and a healthy component of Lake Montauk but is now limited to northern and western portions (NY Dept of State 2002). Flagg and Greene (1981) reported an abundance of eelgrass in the northern half of Lake Montauk with highest abundance in shallow (< 1 meter) areas (cited in USACE 2019). Seagrass beds provide food and cover habitat for marine fish and invertebrates as well as foraging areas for many migratory birds. In addition, the physical structure of seagrasses support shorelines by absorbing wave energy and also promotes sediment deposition by adding resistance to prevailing water currents. The National Marine Fisheries Service (NFMS) has defined eelgrass as Essential Fish Habitat and New York passed the Seagrass Protection Act in 2012 to identify and protect these systems.

Statewide mapping of submerged aquatic vegetation (SAV) provided by NYSDEC indicates that, as recently as 2014, a small seagrass bed (~0.07 acres) was located immediately north of the Project Area along the eastern side of the navigational channel. Previous NYSDEC mapping shows large areas of eelgrass and other submerged aquatic vegetation in 1994, and again in 2000, concentrated to the east and south of Star Island. In 2008, the Cornell Cooperative Extension (CCE) conducted surveys of known seagrass beds along the northeastern side of Lake Montauk including eelgrass beds approximately 500

feet southeast of the Project Area. The entire sampling area within these beds had a median eelgrass shoot density of 115 shoot per square meter (Nelson, Pope, and Voorhis 2014). No historically mapped eelgrass beds were identified in the Project Area as part of this review.

Based on desktop review, there are no jurisdictional wetlands or other water resources within the upland portion of the Project Area. The portion of Lake Montauk within the Project Area is a federal water under jurisdiction of the USACE and a state tidal wetland (SM code: coastal shoal, bar, or mudflat) under jurisdiction of the NYSDEC.

The New York Department of State (NY Dept of State) has designated Lake Montauk as Significant Coastal Fish & Wildlife Habitat partially due to the significant presence of overwintering common loons (*Gavia immer*) and wintering waterfowl (NY Dept of State 2012). The nearshore open waters around Montauk Point provide regionally significant and critical wintering waterfowl habitat and concentrations (USACE 2019). The NY Dept of State highlighted an avian study documenting over 50 species of birds, primarily shore and water birds utilizing Lake Montauk. Common wintering waterfowl included common loon, American black duck (*Anas rubripes*), red-breasted merganser (*Mergus serrator*), Canada goose (*Branta canadensis*), white-winged scoter (*Melanitta deglandi*), scaup (*Aythya* spp.), goldeneye (*Bucephala clangula*), and bufflehead (*Bucephala albeola*). Current use of the in-water portion of the Project Area by migratory birds or waterfowl is unknown, but the Project Area is located in a developed portion of Lake Montauk, with less foraging habitat that other areas of Lake Montauk.

State endangered and federally threatened piping plovers (*Charadrius melodus*) are known to occur and nest on sandy beaches in the general area but have not been documented nesting in the Project Area or on adjacent beaches facing Block Island Sound. Other birds of conservation concern known to occur around the Project area include least bittern (*Ixobrychus exilis;* state threatened), northern harrier (*Circus cyaneus*; state threatened*), red-shouldered hawk (Buteo lineatus;* state species of special concern), whip-poor-will (*Caprimulgus vociferous*; state species of special concern), and osprey (*Pandion haliatus*; state species of special concern; USACE 2019). USACE (2019) also reports that the federally and state threatened northern long-eared bat (*Myotis septentrionalis*) has been documented in the Project area.

4.2.2 Potential Impacts

Seafloor and Land Disturbance

While no historic eelgrass beds have been identified in the Project's in-water work area, a recent SAV survey has not been completed. Dredging and pile driving activities have the potential to physically damage eelgrass beds or other aquatic vegetation if present within the in-water work area.

Temporary physical disturbance of a small physical habitat area (0.86 acre) of water during dredging, pile driving, and dewatering activities is not anticipated to have a meaningful impact on the overall habitat use by migratory birds or waterfowl. When compared to the total surface area of Lake Montauk of 900 acres, the in-water disturbance is less than 0.001% of the total Lake surface area. The Project Area does not appear to contain any unique habitat features for birds. Behavioral avoidance by birds during in-water work may be expected, but due to the anticipated short duration of activities, it is not anticipated to have any significant impacts.

The wildlife habitat value of the small upland portion of the Project area is limited. It is currently zoned as commercial with a mixture of permanent structures and outbuildings and paved surfaces. There is also a small sandy shoal located immediately northwest of the in-water work area. Coastal wildlife of conservation concern (i.e., shorebirds, raptors, or wintering birds) may opportunistically transit through these upland portions but would not be expected to persist here for nesting or foraging in any significant capacity due to lack of habitat and a high level of human disturbance. The Project proposes no construction activities in this small shoal area immediately northwest of the dredge area, which provides only limited loafing habitat and nesting substrate for shorebirds that do not nest colonially. Dredged materials used for beach renourishment will be placed outside of the shorebird breeding season. Northern long-eared bats are not anticipated to be impacted by the Project's in-water work.

Use of the shallow in-water work area by marine mammals or turtles during dredging or pile driving operations is unlikely and not anticipated to have any direct impacts to these species. Listed whale species are not expected to occur in the shallow nearshore or channelized waters of Lake Montauk (USACE 2019). Use of the Project Area by a transient sea turtle during the short duration of in-water work is not anticipated.

Sediment Suspension and Deposition

If eelgrass is located adjacent to in-water work, sediments may be suspended during dredging activities and deposited elsewhere with dominant currents. The placement of this material into adjacent eelgrass or other aquatic vegetation could result in burial and/or reduced water clarity with an associated reduction in photosynthetic activity. Burial of eelgrass could reduce its habitat value for associated fish, wildlife, and invertebrate species. The anticipated low total volume and mobility of anticipated sediments (i.e., largely sand grains) to be disturbed during pile driving and dredging, however, suggests any plumes would cover a small area and be short in duration. Placement of a turbidity curtain during operations would further limit the duration and area of sedimentation. Baseline conditions could be restored to disturbed areas within one or two tidal cycles based on the historical response of other dredged areas in Lake Montauk (i.e., main navigational channel).

Discharges and Releases / Trash and Debris

During construction and operations of the O&M Facility, sanitary and other waste fluids, trash, and miscellaneous debris will be generated but properly managed in accordance with federal and state laws. Vessels will comply with regulatory requirements for management of onboard fluids and fuels, including prevention and control of discharges and accidental spills. Vessels will be navigated by trained, licensed vessel operators who will adhere to navigational rules and regulations, and vessels will be equipped with spill handling materials. Accidental spill or release of oils or other hazardous materials will be managed through the Oil Spill Response Plan for the SFWF (Appendix D of the COP). DWSF and its contractors will also maintain SPCC plans during construction. The likelihood of discharges and releases is expected to be low and impacts to water quality are unlikely.

4.3 BENTHIC RESOURCES AND SHELLFISH

4.3.1 Affected Environment

In general, Lake Montauk's bottom sediments are dominated by sand with various amounts of silt, clay, and gravel. Dredged areas (e.g., marinas) not subject to tidal action have substantially higher amounts of finer materials (USACE 2019). Sediments within the main navigational channel consist predominately (98%) of fine to medium grained sand with trace (2%) amounts of silt (USACE 2019). Sediment analysis of Lake Montauk by CCE in 2008 included sampling of five sites located in the same general location where eelgrass beds were surveyed (approximately 600 feet from the Project Area). Sediments from these five sites were dominated by sand (range from 77% - 92% of average grain size) with lower percentages of silt and clay or gravel-sized grains present (Nelson, Pope, and Voorhis 2014). These conditions are indictive of a baseline sand flat community. Assuming sediment conditions along this portion of Lake Montauk are still similar in 2019, these samples provide a potential snapshot of the Project Area's sediment composition.

Sand flats have high species diversity and support large populations of filter and sediment feeders, grazers, and predatory worms and crustaceans (Maine DEP 1999). In addition, they provide nursery sites for finfish, sand shrimp, clams, and other invertebrates. It is important to note there is limited information on the specific composition of benthic communities within Lake Montauk. The 2008 CCE study previously referenced also sampled sediments and infauna from 20 stations across Lake Montauk. None of the sampling stations, however, were located close to the proposed Project Area. The study findings showed a dominance of polychaetes (segmented worms) across all samples with bivalves at two sites and a ribbon worm from a single station. Based on the low number of total species encountered and few individuals collected within each species, the CCE concluded that Lake showed levels of impairment (Nelson, Pope, and Voorhis 2014).

Under 6NYCRR Parts 700-705, the NYSDEC has classified Lake Montauk with a SA marine water classification; a standard indicating conditions are suitable for growing shellfish for market purposes and as well as for their general propagation and survival. Lake Montauk is one of four prime bay scallop grounds in the Town of East Hampton (USACE 2019), and in general provides important regional habitat for commercial shellfish including bay scallops, clams, and oysters. Northern quahog (*Mercenaria mercenaria*) are found throughout Lake Montauk and are harvested commercially (USACE 2019). Additionally, traps are also deployed around the inlet of Lake Montauk for American lobster (*Homarus americanus*) and channeled whelk (*Busycotypus canaliculatus*; Flagg and Green 1981 as cited in USACE 2019). Seining surveys have also documented macroinvertebrates including grass shrimp, periwinkles and slipper shells.

While there is no site-specific information on shellfish use or habitat suitability, the Project Area likely provides suitable habitat for clams and other shellfish. The Project Area also is included in a permanent shellfish closure area under 6 NYCRR Part 41. Closure of this area to shellfish harvest, however, is administrative, and due to the persistent and heavy boat traffic in the area rather than from concerns around water quality.

4.3.2 Potential Impacts

Seafloor and Land Disturbance

Similar to the discussion on eelgrass in Section 4.2.2, dredging and dewatering activities have the potential to directly damage benthic habitat and/or impact species occupying the dredged material. Dredges remove bivalves, benthic infauna and epi-benthic (i.e, surface dwellers) from target dredge areas (NMFS 2011). The physical area to be disturbed by the dredge or dewatered area, however, would be re-colonized by a similar assemblage of species in a short period of time based on the historic response of dredged areas elsewhere in Lake Montauk. Pile driving activities also have potential to damage benthic organisms if they occur in the footprint of the driven sheet piles. However, pile driving will be used only to oversheet the existing bulkhead only, utilizing a small footprint and have a minimal footprint. As such, Project-associated in-water work impacts to benthic resources including shellfish habitat and macroinvertebrates is not anticipated to result in long-term impacts.

Sediment Suspension and Deposition

Sediments that are disturbed by vibratory pile driving and dredge, but not captured, have the potential to be suspended and re-deposited elsewhere with tidal currents. Placement of this material into adjacent areas could result in the burial and/or smothering of immobile benthic species. However, many species living in shallow coastal waters are exposed to and survive periodic episodes of turbidity. Natural tides and storms can disturb sediments to levels that equal or exceed the disturbances caused by commercial shellfish dredges (NMFS 2011). Based on the low total volume and mobility of anticipated sediments (i.e., sand grains) disturbed by the Project's in-water work, any plumes likely would have limited dispersal and be short in duration. Baseline conditions could be restored to areas disturbed by the Project within one or two tidal cycles. Turbidity plumes from dredging of the main navigational channel are anticipated to mimic natural storm events and comparable to the prop wash currently associated with vessel traffic (USACE 2019). Given these factors and the native species' tolerance for periodic increases in turbidity, any sediment plumes from dredge or pile driving activities are unlikely to have an impact on the adjacent benthic community.

Discharges and Releases / Trash and Debris

During construction and operations of the O&M Facility, sanitary and other waste fluids, trash, and miscellaneous debris will be generated but properly managed in accordance with federal and state laws. Vessels will comply with regulatory requirements for management of onboard fluids and fuels, including prevention and control of discharges and accidental spills. Vessels will be navigated by trained, licensed vessel operators who will adhere to navigational rules and regulations, and vessels will be equipped with spill handling materials. Accidental spill or release of oils or other hazardous materials will be managed through the Oil Spill Response Plan for the SFWF (Appendix D of the COP). DWSF and its contractors will also maintain SPCC plans during construction. The likelihood of discharges and releases is expected to be low and impacts to benthic habitat are unlikely.

4.4 FINFISH AND ESSENTIAL FISH HABITAT

4.4.1 Affected Environment

According to the Significant Coastal Fish & Wildlife Habitat designation for Lake Montauk, bluefish, weakfish, fluke, flounder, blowfish, white bait and striped bass are known to reside in and be harvested from Lake Montauk (NY Dept of State 2012). The Town of East Hampton's seining report provides general information on finfish present in Lake Montauk. Between 1997 and 2008, a total of 118 different finfish and shellfish species were documented with striped bass being the most abundant ((Nelson, Pope, and Voorhis 2014). On average, a total of 80 individual striped bass were collected per survey per year. In general, open sand flats can provide foraging habitat for important finfish including winter flounder, Atlantic herring, alewife, and Atlantic mackerel (Maine DEP 1999). Eelgrass communities may provide structure, escape cover, and foraging habitat for important commercial and recreational finfish including black sea bass, bluefish, flounder, Atlantic herring, and bay anchovy (Connecticut DEP 2007).

The New York Bight Distinct Population Segment (DPS) of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is a NMFS-threatened fish known to occupy marine waters throughout Long Island Sound and individuals do occasionally wash up around Montauk Point. This anadromous species hatches in freshwater rivers before heading to marine waters as juveniles. Upon reaching adulthood, individuals return to their natal rivers to spawn. NMFS has reported that 85% of Atlantic sturgeon caught in Long Island Sound were in waters 27-37 meters deep (88-121 feet) with mud/transitional bottoms, which is significantly deeper than the water depths in the Project area.

Essential Fish Habitat (EFH), established under the 1996 Magnuson-Stevens Fishery Conservation and Management Act, identifies areas of aquatic habitat required by key fish species to spawn, breed, forage, and grown to full maturity. Based on a coarse-scale query in February 2020 using the National Marine Fisheries Service (NMFS) EFH Mapper (https://www.habitat.noaa.gov/application/efhmapper), 20 species have components of EFH that overlap with the Project Area. A list of these species has been prepared and key characteristics of EFH for each species is presented in Appendix A.

4.4.2 Potential Impacts

Seafloor and Land Disturbance

The physical removal of eelgrass beds or other aquatic vegetation by in-water work could affect EFH and habitat for Lake Montauk's other finfish, as described in Section 4.2.2. The anticipated area of dredging, pile-driving and dewatering is small relative to the size of Lake Montauk and any impacts to finfish within the in-water work area will be temporary in nature (i.e., within a few tidal cycles) and use of the in-water work area by commercially important finfish species would be expected to return to baseline conditions given the historic return of previously dredged areas to pre-work conditions in other areas of Lake Montauk (i.e., main navigational channel). Therefore, construction activities are expected to have negligible effects to EFH and finfish populations in Lake Montauk.

Sediment Suspension and Deposition

Sediments disturbed by vibratory pile driving or dredge, but not captured, could move into adjacent areas and result in turbid conditions that may bury eggs and/or create temporary areas of avoidance as the sediment plume moves through the water column. Fish that are not well-adapted to turbid conditions may experience injury as gills become clogged with sediment. Exposure to contaminated sediments can cause behavioral, sublethal, and even mortality in exposed fish. As mentioned earlier, there is no evidence elevated levels of contaminants occur within the materials proposed for dredging. Based on the low total volume of uncaptured sediments and the low mobility of these materials (i.e., sand grains), any plumes would be short in duration, reducing the potential for burial of benthic eggs or larvae. Installation of a turbidity curtain during pile driving would further reduce the duration and size of plumes. Given these factors and the capacity for fish to avoid the in-water work area, physical exposure from any sediment plumes is unlikely to have a meaningful impact on local fish populations.

Noise

NMFS has established hydroacoustic thresholds that are to be used when evaluating potential underwater noise effects to fish from pile driving activities. These thresholds are based on scientific studies of fish physiology and recordings of noise levels during underwater pile-driving activities. These thresholds provide the best current information on the levels at which fish species begin to modify their behavior in response and/or experience physiological effects (e.g., injury or mortality) from underwater noise. Vibratory pile driving produces less underwater noise than impact driving and resource agencies in general are not concerned about adverse direct physiological effects to fish from vibratory installation (Caltrans 2015). In one instance, vibratory installation of 24” steel sheet piles in 50 feet (15 meters) of water produced enough noise (150dB RMS) to suggest a behavioral response, likely startle and avoidance of the area, by fish (Caltrans 2015). These measurements, however, occurred in deeper water and sound attenuates more rapidly in shallow conditions. As a result, underwater noise from vibratory pile driving for bulkhead rehabilitation is unlikely to cause any significant response in fish. While sound recordings of operational dredging activities are limited, current information and the literature suggests that dredging operations (regardless of method used) generate lower sound levels than pile driving and do not exceed NMFS thresholds for physiological effects to fish. There may be some behavioral avoidance of the dredged area by fish during in-water activities as a result of underwater noise. However, due to the short duration of in-water activities and a presumed high ambient underwater noise from existing harbor vessel traffic, the effects of Project-related noise are not expected to have a meaningful impact on fish populations within Lake Montauk. Underwater noise thresholds also exist for marine mammals; however, these species are not expected to occur in or near the work area. As a result, no further assessment of the effects of underwater noise on marine mammals is necessary.

Discharges and Releases / Trash and Debris

During construction and operations of the O&M Facility, sanitary and other waste fluids, trash, and miscellaneous debris will be generated but properly managed in accordance with federal and state laws. Vessels will comply with regulatory requirements for management of onboard fluids and fuels, including prevention and control of discharges and accidental spills. Vessels will be navigated by trained, licensed

vessel operators who will adhere to navigational rules and regulations, and vessels will be equipped with spill handling materials. Accidental spill or release of oils or other hazardous materials will be managed through the Oil Spill Response Plan for the SFWF (Appendix D of the COP). DWSF and its contractors will also maintain SPCC plans during construction. The likelihood of discharges and releases or trash and debris is expected to be low and impacts to benthic habitat are unlikely.

4.5 COMMERCIAL AND RECREATIONAL FISHING

4.5.1 Affected Environment

Montauk Harbor provides infrastructure for one of the largest concentrations of commercial, and recreational, fishing vessels in New York. The main navigational channel west of the Project Area is used by an average of 500 boats per day during the warmer season (USACE 2019). Most of the support facilities for these vessels are located immediately opposite the Project Area along the western side of Lake Montauk. In 1989, this harbor was the largest commercial port in the state by landings (estimated at 9.6 million pounds) and number of total vessels (NY Dept of State 2012). The commercial fleet using Montauk Harbor has increased by 578% since 1967 and currently total 148 vessels (USACE 2019). In 2017, the Harbor brought in an estimated 10.1 million pounds of commercial products, valued at 14.8 million dollars (NMFS 2019). As discussed in Sections 7 and 8, Lake Montauk provides a significant commercial fishery for bay scallops, hard clam, and bait fish.

Commercial and recreational important fish species in the Lake Montauk watershed were identified by the USACE (2019) as alewife, American eel, American sand lance (*Ammodytes americanus*), Atlantic butterfish (*Peprilus triacanthus*), Atlantic croaker (*Micropogonias undulatus*), Atlantic mackerel (*Scomber scombrus*), black sea bass (*Centropristis striata*), bluefish (*Pomatomus saltatrix*), bluegill (*Lepomis macrochirus*), cod (*Gadus callarias*), pumpkinseed (*Lepomis gibbosus*), scup, silver hake (*Merluccius bilinearis*), smallmouth bass (*Micropterus dolomieu+*), spot (*Leiostomus xanthurus*), striped bass, summer flounder (*Paralichthys dentatus*), tautog (*Tautoga onitis*), and winter flounder (*Pleuronectes americanus*).

Although Lake Montauk provides infrastructure for fishing vessels, the area where the O&M Facility is proposed is in a heavily trafficked portion of Lake Montauk that is unlikely to directly support recreational or commercial fishing activities. There is also a permanent shellfish closure area under 6 NYCRR Part 41 for this area.

4.5.2 Potential Impacts

Seafloor and Land Disturbance

The Project Area where in-water work is proposed is not likely to affect Lake Montauk's ability to support commercial fisheries. Impacts to finfish within the in-water work area will be temporary in nature (i.e., within a few tidal cycles) s. Occupancy by dominant shellfish species and/or use of the in-water work area by commercially important finfish species would be expected to return to baseline conditions given the historic return of previously dredged areas to pre-work conditions in other areas of Lake Montauk (i.e., main navigational channel).

Sediment Suspension and Deposition

Deposition of suspended sediments into adjacent areas will be short in duration and unlikely to have long-term impacts to local finfish and/or shellfish of commercial value. Sediment plumes will disperse along existing tidal current patterns and are not expected to affect the navigability of Lake Montauk for commercial or recreational vessels in any significant manner. Plumes will be of even smaller intensity and duration if generated behind turbidity curtains (i.e., during pile driving).

Discharges and Releases / Trash and Debris

During construction and operations of the O&M Facility, sanitary and other waste fluids, trash, and miscellaneous debris will be generated but properly managed in accordance with federal and state laws. Vessels will comply with regulatory requirements for management of onboard fluids and fuels, including prevention and control of discharges and accidental spills. Vessels will be navigated by trained, licensed vessel operators who will adhere to navigational rules and regulations, and vessels will be equipped with spill handling materials. Accidental spill or release of oils or other hazardous materials will be managed through the Oil Spill Response Plan for the SFWF (Appendix D of the COP). DWSF and its contractors will also maintain SPCC plans during construction. The likelihood of discharges and releases is expected to be low and impacts to benthic habitat are unlikely.

Traffic

The Project's in-water work is located outside of the main navigational channel and would have no effect on the navigability of this channel by recreational or commercial boat traffic. All vessels associated with construction activities will follow requirements of the United States Coast Guard for operations in Montauk Harbor.

5.0 LITERATURE CITED

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APPENDIX A
ESSENTIAL FISH HABITAT

	Maturity Stage	2. EFH General Habitat Parameters Water Temp. (° C)	Salinity ppt	Water Depth (m)	Seasonal Occurrence / Abundance	Comments
Winter Flounder	Eggs	< 10	10-30	<5	FEB-JUN	Bottom habitats with a substrate of sand, muddy sand, mud, and gravel
	Larvae	< 15 (surface)	4-30	<6	MAR-JUL	Pelagic and bottom waters
	Juveniles (2)	<28	5-33	0.1-10		Bottom habitats with mud or fine-grained sand substrate
	Juveniles (3)	<25	15-33	1-50		Bottom habitats with mud or fine-grained sand substrate
	Adult	<25	15-33	1-100		Bottom habitats of mud, sand, or gravel substrate
	Spawning Adult	<15	5.5-36	<6	FEB-JUN (spawning)	Bottom habitats of mud, sand, or gravel substrate
Little Skate	Juvenile	-	-	<80		Intertidal and sub-tidal benthic habitats in coastal waters of the Gulf of Maine and in the Mid-Atlantic region as far south as Delaware Bay, and on Georges Bank. Sand, mud, and gravel substrates.
	Adult	-	-	<100		Intertidal and sub-tidal benthic habitats in coastal waters of the Gulf of Maine and in the Mid-Atlantic region as far south as Delaware Bay, and on Georges Bank. Sand, mud, and gravel substrates.
Atlantic Herring	Juvenile	3-15	-	<300		Intertidal and sub-tidal pelagic habitats
	Adult	<10	-	<300		Sub-tidal pelagic habitats
Atlantic cod	Adult	-	-	30-160		Sub-tidal benthic habitats in the Gulf of Maine, south of Cape Cod, and on Georges Bank. Structurally complex hard bottom habitats composed of gravel, cobble, and boulder substrates with and without emergent epifauna and macroalgae
Red Hake	Adult	-	-	20-750		Shell beds, soft sediments (mud and sand), and artificial reefs.
Yellowtail Flounder	Adult	-	-	25-90		Sand and sand with mud, shell hash, gravel, and rocks
Windowpane Flounder	Adult	-	-	<70		Mud and sand substrates
	Larvae	-	-	-		Pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries
	Eggs	-	-	-		Pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries
	Juvenile	-	-	<60		Mud and sand substrates
Winter Skate	Adult	-	-	<80		Sub-tidal benthic habitats in coastal waters from eastern Maine to Delaware Bay and on the continental shelf in southern New England and the Mid-Atlantic region, and on Georges Bank. From shoreline to maximum depth of 80m. Occurs on sand, gravel, and mud substrates
	Juvenile	-	-	<90		Sub-tidal benthic habitats in coastal waters from eastern Maine to Delaware Bay and on the continental shelf in southern New England and the Mid-Atlantic region, and on Georges Bank. From shoreline to maximum depth of 90m. Occurs on sand, gravel, and mud substrates
Albacore tuna	Juvenile	-	-	-		Offshore, pelagic habitats of the Atlantic Ocean from the outer edge of the U.S. EEZ through Georges Bank to pelagic habitats south of Cape Cod, and from Cape Cod to Cape Hatteras, North Carolina.

	2. EFH General Habitat Parameters					
	Maturity Stage	Water Temp. (° C)	Salinity ppt	Water Depth (m)	Seasonal Occurrence / Abundance	Comments
Sandbar Shark	Adult	-	-	-		EFH in the Atlantic Ocean includes coastal areas from southern New England to the Florida Keys
	Juvenile	15-30	15-35ppt	0.8 – 23		EFH includes coastal portions of the Atlantic Ocean between southern New England (Nantucket Sound, Massachusetts) and Georgia
Skipjack tuna	Adult	20-31	-	-		Coastal and offshore habitats between Massachusetts and Cape Lookout, North Carolina
Smoothhound Shark Complex (Atlantic Stock)	ALL	-	-	-		Coastal areas from Cape Cod Bay, Massachusetts to South Carolina, inclusive of inshore bays and estuaries. EFH also includes continental shelf habitats between southern New Jersey and Cape Hatteras, North Carolina.
Sand Tiger Shark	Neonate	19-25	23-30ppt	2.8-7		Massachusetts to Florida, specifically the PKD bay system, Sandy Hook, and Narragansett Bays as well as coastal sounds, lower Chesapeake Bay, Delaware Bay
	Juvenile	19-25	23-30ppt	2.8-7		Massachusetts and New York (PKD bay system), and between mid-New Jersey and the mid-east coast of Florida.
Scup	Adult	-	-	-		Demersal waters over the continental shelf and estuaries
	Larvae	13-23	>15 ppt	-	MAY-SEPT	Estuaries
	Eggs	13-23	>15 ppt	-	MAY-AUG	Estuaries
	Juvenile	> 7	>15 ppt	-		Demersal waters over the continental shelf and estuaries
Longfin Inshore Squid	Adult	9-14	24-37 ppt	< 400		Inshore and offshore continental shelf waters from Georges Bank to South Carolina, in inshore waters of the Gulf of Maine, and in embayments such as Narragansett Bay, Long Island Sound, Raritan Bay, and Delaware Bay
	Juvenile	9-25	29-37 ppt	6 - 160		Inshore and offshore continental shelf waters from Georges Bank to South Carolina, in the southwestern Gulf of Maine, and in embayments such as Narragansett Bay, Long Island Sound, and Raritan Bay.
	Eggs	10-23	30-32 ppt	< 50		Inshore and offshore bottom habitats from Georges Bank southward to Cape Hatteras
Atlantic mackerel	Adult	5-20	-	<170		Inshore estuaries and embayments from Passamaquoddy Bay, Maine to the Hudson River, and on the continental shelf from Georges Bank to Cape Hatteras, North Carolina
	Larvae	5.5-11.5	-	21-100		Inshore estuaries and embayments from Great Bay, New Hampshire to the south shore of Long Island, New York, inshore waters of the Gulf of Maine, and on the continental shelf from Georges Bank to Cape Hatteras, North Carolina (mostly north of 38°N).
	Eggs	6.5-12.5	-	<100		Inshore estuaries and embayments from Great Bay, New Hampshire to the south shore of Long Island, New York, inshore waters of the Gulf of Maine, and on the continental shelf from Georges Bank to Cape Hatteras, North Carolina (mostly north of 38°N).
	Juvenile	5-20	-	10-110		Pelagic habitats in inshore estuaries and embayments from Passamaquoddy Bay and Penobscot Bay, Maine to the Hudson River, in the Gulf of Maine, and on the continental shelf from Georges Bank to Cape Hatteras, North Carolina.

	Maturity Stage	2. EFH General Habitat Parameters				
		Water Temp. (° C)	Salinity ppt	Water Depth (m)	Seasonal Occurrence / Abundance	Comments
Bluefish	Adult	-	>25	-		Mostly pelagic waters over continental shelf, highly migratory and distribution varies
	Juvenile	-	-	M,S[1]	MAY-OCT	Mostly pelagic waters over continental shelf
Atlantic butterfish	Adult	4.5 – 27.5	>5 ppt	10-250		Pelagic habitats in inshore estuaries and embayments from Massachusetts Bay to Pamlico Sound, North Carolina, inshore waters of the Gulf of Maine and the South Atlantic Bight, on Georges Bank, on the inner continental shelf south of Delaware Bay, and on the outer continental shelf from southern New England to South Carolina.
	Larvae	8.5-21.5	-	41-350		Pelagic habitats in inshore estuaries and embayments in Boston harbor, from the south shore of Cape Cod to the Hudson River, and in Delaware and Chesapeake bays, and on the continental shelf from the Great South Channel (western Georges Bank) to Cape Hatteras, North Carolina.
	Eggs	6.5-21.5	-	<1,500		Pelagic habitats in inshore estuaries and embayments from Massachusetts Bay to the south shore of Long Island, New York, in Chesapeake Bay, and on the continental shelf and slope, primarily from Georges Bank to Cape Hatteras, North Carolina.
	Juvenile	6.5-27	>5 ppt	10-280		Pelagic habitats in inshore estuaries and embayments from Massachusetts Bay to Pamlico Sound, North Carolina, in inshore waters of the Gulf of Maine and the South Atlantic Bight, and on the inner and outer continental shelf from southern New England to South Carolina.
Summer flounder	Adult	-	S	0 -150		Demersal waters over Continental Shelf, shallow coastal and estuarine waters in warmer months; offshore to depths of 150m in colder months
	Juvenile	>3	10-30	-		Demersal waters over Continental Shelf, prefer mostly sandy bottom.
Black sea bass	Adult	>6	-	-		Offshore, EFH is the demersal waters over the continental shelf (from the coast out to the limits of the EEZ). Inshore, EFH is estuaries. Structured habitats (natural and man-made), sand and shell are usually the substrate preference.
	Juvenile	>6	> 18	-		Demersal waters over the Continental Shelf; found in association with rough bottom, shellfish and eelgrass beds, and man-made structures in sandy-shelly areas; during wintering offshore clam beds and shell patches may be used; found is S zone in estuaries during summer and spring

(1) Juveniles are found in Mid-Atlantic estuaries in mixing (M) and (S) seawater zones.