

Finding of Adverse Effect for the South Fork Wind Farm and South Fork Export Cable Construction and Operations Plan August 2021

U.S. Department of the Interior
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List of Abbreviations

ACHP	Advisory Council on Historic Preservation
ADLS	Aircraft detection lighting system
BIWF	Block Island Wind Farm
BOEM	Bureau of Ocean Energy Management
CFR	Code of Federal Regulations
CHRVEA	Cumulative Historic Resources Visual Effects Assessment
COP	construction and operations plan
Finding	finding of adverse effect
GIS	geographic information system
ha	hectare
HDD	Horizontal directional drilling
HRVEA	Historic Resources Visual Effects Assessment
km	kilometer
Lease Area	Area of BOEM Renewable Energy Lease Number OCS-A 0517
m	meter
MARA	Marine Archaeological Resources Assessment
MW	megawatt
MWA	maximum work area
MOA	memorandum of agreement
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
nm	nautical mile
NOI	notice of intent
NPS	National Park Service
NRHP	National Register of Historic Places
O&M	operations and maintenance
OCS	Outer Continental Shelf
OSS	offshore substation
PDE	project design envelope
Project	South Fork Wind Farm and South Fork Export Cable Project
RI-MA WEAs	Rhode Island-Massachusetts Wind Energy Areas
ROW	Right-of-way
SFEC	South Fork Export Cable
SFW	South Fork Wind, LLC
SFWF	South Fork Wind Farm
SHPO	State Historic Preservation Officer
Tribes	Native American Tribes
WTG	wind turbine generator

1 Introduction

The Bureau of Ocean Energy Management (BOEM) has made a finding of adverse effect (Finding), for the South Fork Wind Farm (SFWF) and South Fork Export Cable (SFEC) Project (the Project) pursuant to 36 CFR 800.5, in compliance with Section 106 of the National Historic Preservation Act (NHPA) (54 USC 306108). The SFWF is in the Rhode Island-Massachusetts Wind Energy Areas (RI-MA WEAs) and the SFEC connects to New York (NY). BOEM finds that implementation of the Project would adversely affect the 10 historic properties listed below, introducing visual effects and adding to cumulative visual effects from wind turbine generator (WTG) visibility.

- Block Island South East Lighthouse (National Historic Landmark [NHL]), RI
- Old Harbor Historic District (National Register of Historic Places [NRHP] listed), RI
- Spring House Hotel (NRHP eligible), RI
- Spring House Hotel Cottage (NRHP eligible), RI
- Spring Street Historic District (NRHP eligible), RI
- Capt. Mark L. Potter House (NRHP eligible), RI
- Vaill Cottage (NRHP eligible), RI
- Gay Head Light (NRHP listed), MA
- Gay Head – Aquinnah Shops (NRHP eligible), MA
- Vineyard Sound and Moshup’s Bridge Traditional Cultural Property (TCP) (NRHP eligible), MA

Additionally, in the COP, South Fork Wind, LLC (SFW)¹ has identified five ancient submerged landform features on the Outer Continental Shelf (OCS) where SFEC cabling installation activities would not be able to avoid physical disturbance, and, therefore, BOEM has determined the following five historic properties would be adversely affected:

- SFEC-CF-3
- SFEC-CF-5
- SFEC-CF-7
- SFEC-CF-9
- SFEC-CF-13

¹On November 7, 2018, Ørsted completed an acquisition of all of the equity of Deepwater Wind South Fork, LLC. A new company, Ørsted US Offshore Wind, combines the two North American offshore wind developers. Ørsted subsequently renamed the subsidiary as South Fork Wind, LLC; therefore, this document refers to SFW throughout.

2 Project Overview

On June 29, 2018, BOEM received the initial COP to develop a wind energy project within Commercial Lease OCS-A 0517 (offshore RI) from SFW. In the most recent version of the COP, (submitted in 2020), SFW proposes the construction, operation, and eventual decommissioning of the Project, with up to 15 offshore WTGs, an offshore substation (OSS), offshore and onshore cabling, an onshore substation, and an onshore operations and maintenance (O&M) facility (Figure 1 [BOEM 2021a: Figure 1.2.1-1]). SFW is utilizing a project design envelope (PDE) in its COP, which represents a reasonable range of design parameters that may be used for the Project. In reviewing the PDE, BOEM is analyzing the maximum impacting scenario that could occur from any combination of the contemplated parameters. BOEM's analysis and review of the PDE may result in the approval of a project that is constructed within that range or a subset of design parameters within the proposed range.

For the SFWF, each of the up to 15 WTGs would have a nameplate capacity of 6 to 12 megawatts (MWs) per WTG. In addition to the WTGs, there would be submarine inter-array cables connecting the WTGs and an OSS mounted on a dedicated foundation or co-located with a WTG, all of which would be located within Lease Area OCS-A 0517 (Lease Area), approximately 19 miles (30.6 kilometers [km]) southeast of Block Island, RI, and 35 miles (56.3 km) east of Montauk Point, NY. The SFWF would also entail construction of an onshore O&M facility that would be located onshore at either Montauk, NY, or Quonset Point in North Kingstown, RI.

The SFEC is an alternating current electrical cable connecting the SFWF to the existing mainland electrical grid in East Hampton, NY. The SFEC includes both offshore and onshore segments. Offshore, the SFEC would cross both federal OCS and NY waters. The SFEC would come to shore at landfall locations in either the town of East Hampton or Hither Hills State Park in Montauk via a sea-to-shore transition, where the offshore and onshore cables would be spliced together. The COP no longer proposes a previously reviewed landfall location at Napeague State Park, NY, and this location is not being analyzed for Project use by BOEM. The terrestrial underground segment of the export cable would be located in East Hampton. The SFEC would also include construction of a new interconnection facility where the SFEC would interconnect with the Long Island Power Authority electric transmission and distribution system in East Hampton.

If approved by BOEM, SFW would be allowed to construct and operate offshore WTGs, an export cable to shore, and associated facilities for a specified term. BOEM is now conducting its environmental and technical reviews of the COP and has published a draft environmental impact statement (EIS) under the National Environmental Policy Act (NEPA) for its decision regarding approval of the plan (BOEM 2021a). The EIS information for the Project, including the revised COP, are available at <https://www.boem.gov/renewable-energy/state-activities/south-fork>. The EIS considers reasonably foreseeable impacts of the proposal, specifically analyzing impacts to cultural resources, including historic properties. BOEM is in the process of completing the final EIS on the Project at the time of this Finding release, and the Finding is consistent with final EIS information to date.

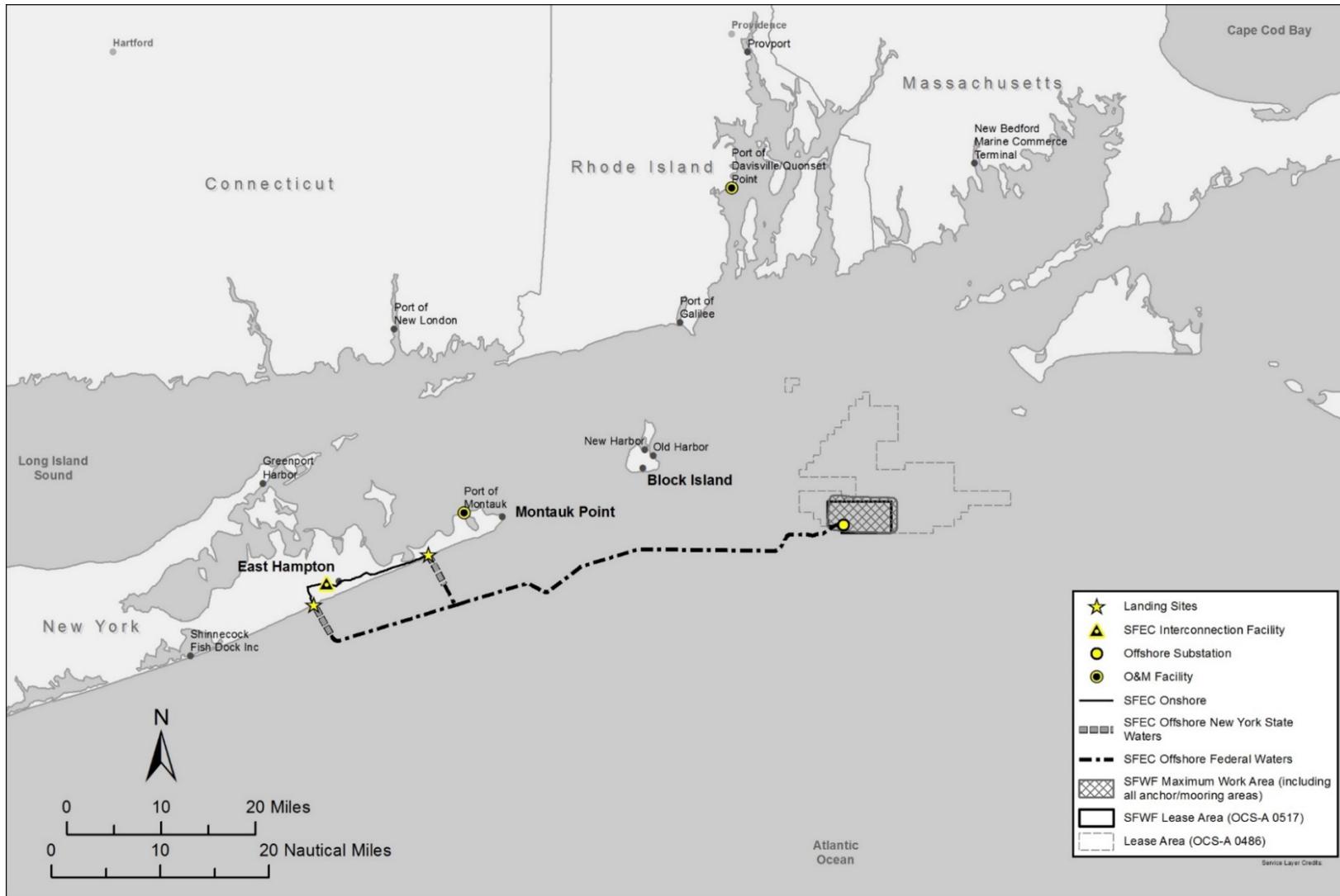


Figure 1. SFWF COP proposed Project elements.

Note: The named places on this figure in black font represent port, harbor, and terminal facilities considered in the COP for Project construction support.

2.1 Background

The Project is within a commercial lease area that has received previous Section 106 review by BOEM regarding the issuance of the commercial lease and approval of site assessment activities and is subject to two prior programmatic agreements (PAs): *Programmatic Agreement Among The U.S. Department of the Interior, Bureau of Ocean Energy Management; The State Historic Preservation Officers of Massachusetts and Rhode Island; The Mashpee Wampanoag Tribe; The Narragansett Indian Tribe; The Wampanoag Tribe of Gay Head (Aquinnah); and The Advisory Council on Historic Preservation; Regarding the “Smart from the Start” Atlantic Wind Energy Initiative: Leasing and Site Assessment Activities offshore Massachusetts and Rhode Island* (<http://www.boem.gov/MA-RI-PA-Executed>) and *Programmatic Agreement Among The U.S. Department of the Interior, Bureau of Ocean Energy Management, The State Historic Preservation Officers of New Jersey and New York, The Shinnecock Indian Nation, and The Advisory Council on Historic Preservation Regarding Review of Outer Continental Shelf Renewable Energy Activities Offshore New Jersey and New York Under Section 106 of the National Historic Preservation Act* (<http://www.boem.gov/NY-NJ-Programmatic-Agreement-Executed>). In 2012, BOEM executed a PA among the State Historic Preservation Officers (SHPOs) of MA and RI, the Advisory Council on Historic Preservation (ACHP), the Mashpee Wampanoag Tribe, the Narragansett Indian Tribe, and the Wampanoag Tribe of Gay Head (Aquinnah) (see www.boem.gov/MA-RI-PA-Executed) and concurrently conducted a Section 106 review of its decision to issue commercial leases within the RI-MA WEAs.

Additionally, in 2016, BOEM executed a PA among the SHPOs of NY and New Jersey (NJ) and the ACHP to consider renewable energy activities offshore NY-NJ (see www.boem.gov/NY-NJ-Programmatic-Agreement-Executed). In 2013, BOEM prepared an environmental assessment to analyze the environmental impacts associated with issuing commercial wind leases and approving site assessment activities within the RI-MA WEAs; a commercial lease sale for RI was held later that year. SFW was the winner of Lease OCS-A 0517 (under its current number designation). Subsequent to award of the lease, SFW submitted a site assessment plan describing the proposed construction, operation, maintenance, and decommissioning of a stand-alone offshore meteorological data collection system, which BOEM reviewed under Section 106, resulting in the September 21, 2016, *Finding of No Historic Properties Affected for Approval of the Deepwater Wind Site Assessment Plan on the Outer Continental Shelf Offshore Rhode Island* (see www.boem.gov/Renewable-Energy-Program/State-Activities/HP/RI-SAP-Finding.aspx).

2.2 Undertaking

BOEM has determined that approval, approval with modification, or disapproval of the COP constitutes an undertaking subject to Section 106 of the NHPA and its implementing regulations (36 CFR 800) and that the activities proposed under the COP have the potential to affect historic properties. Detailed information about the Project, including the COP and its appendices, can be found on BOEM’s website (see <https://www.boem.gov/renewable-energy/state-activities/south-fork>). Confidential appendices to the COP referenced in this document, and their revisions, were provided to all consulting parties beginning June 29, 2020. The COP, as well as its public and confidential appendices, is hereby incorporated by

reference. BOEM has coordinated its NHPA Section 106 and NEPA reviews pursuant to 36 CFR 800.8(a). The Section 106 and NEPA reviews included three action alternatives as described in the EIS² (Table 1) – this Section 106 review analyzes the potential effects of all three action alternatives.

Table 1. Description of Action Alternatives Reviewed in the EIS

Alternative	Description (from BOEM 2020)
Proposed Action alternative	Under this alternative, the construction and installation, O&M, and conceptual decommissioning of up to 15 WTGs in the 6- to 12-MW range, an OSS within the Lease Area (including the expanded maximum work area for construction), and associated export cables would occur within the range of design parameters outlined in the COP, subject to applicable mitigation measures. SFW would space WTGs in a uniform east–west and north–south grid with 1 × 1–nautical-mile (nm) spacing between WTGs and diagonal transit lanes at least 0.6 nm wide. This configuration would still allow micrositing of WTGs to avoid sensitive cultural resources and marine habitats.
Vessel Transit Lane alternative	Under this alternative, BOEM evaluated a 4-nm-wide vessel transit lane through the Lease Area where no surface occupancy would occur. BOEM developed this alternative in response to the January 3, 2020, Responsible Offshore Development Association (RODA) layout proposal (RODA 2020). The RODA proposal includes designated transit lanes, each at least 4 nm wide. Although the proposal includes six total transit lanes, only one lane intersects the Lease Area. The vessel transit lane is unique to this alternative and could facilitate transit of vessels through the Lease Area from southern New England and eastern Long Island ports to fishing areas in the region. WTGs located within the transit lane would be eliminated under this alternative (however, up to 15 WTGs may still be installed outside those lanes). SFW would develop the remaining WTGs with a 12-MW capacity and would move the offshore substation north of the currently proposed location and install it in one of the remaining WTG locations. The Transit alternative is within the proposed design envelope of up to 15 WTGs in the 6- to 12-MW range.
Fisheries Habitat Impact Minimization alternative (Preferred Alternative)	Under this alternative, the construction and installation, O&M, and conceptual decommissioning of WTGs, an OSS within the Lease Area, and associated inter-array and export cables would occur within the range of design parameters outlined in the COP, subject to applicable mitigation measures. However, to reduce impacts to complex fisheries habitats, as compared to the Proposed Action, BOEM would require SFW to exclude certain WTGs and associated cable locations if micrositing is not possible to maintain a uniform east–west and north–south grid of 1 × 1–nm spacing between WTGs with diagonal transit lanes at least 0.6 nm wide. Under the Habitat alternative, BOEM may approve fewer WTG locations than proposed by SFW.

² For more information on the Final EIS, and the alternatives assessed, please see <https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/SFWF%20FEIS.pdf>.

2.3 Area of Potential Effects

Through consultation with the SHPOs during development of the above-referenced PAs and development of BOEM's *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* (guidelines), BOEM has defined the Area of Potential Effects (APE) for approval of a COP to include the following geographic areas:

- the depth and breadth of the seabed potentially impacted by any bottom-disturbing activities, constituting the marine archaeological resources portion of the APE;
- the depth and breadth of terrestrial areas potentially impacted by any ground-disturbing activities, constituting the terrestrial archaeological resources portion of the APE;
- the viewshed from which renewable energy structures, whether located offshore or onshore, would be visible, constituting the viewshed portion of the APE; and
- any temporary or permanent construction or staging areas, both onshore and offshore, which may fall into any of the above portions of the APE.

Effects are only assessed to historic properties within the APE for the Project. This includes reasonably foreseeable effects caused by the Project that may occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5(a)(1)).

2.3.1 Marine Archaeological Resources Area of Potential Effects

The marine archaeological resources portion of the APE (hereafter marine APE) for the SFWF includes the maximum work area (MWA) (Figure A-1 in Appendix A [Gray and Pape Inc. (Gray & Pape) 2020: Figure 1-2]). The MWA encompasses all offshore areas where seafloor-disturbing activities from inter-array cable trenching and installation, boulder relocation, and vessel anchoring may occur, up to a maximum vertical extent of 15 feet (4.7 meters [m]) below the seafloor. SFW proposes up to 15 WTGs and one OSS within the extent of the MWA. Each potential foundation location additionally includes a 1,312-foot (400-m) radius temporary foundation workspace that delineates the area where micrositing of foundation positions may take place and where seafloor-disturbing impacts related to installation of the monopole foundations may occur, up to a maximum vertical extent of 164 feet (50 m) below the seafloor.

The marine APE also includes the export cable and sea-to-shore transition (Figure A-2 in Appendix A [Gray & Pape 2020: Figure 1-3]). The SFEC includes a 590-foot-wide (180-m-wide) corridor extending from the Lease Area to the sea-to-shore transition at landfall locations in either the town of East Hampton or Hither Hills State Park. Within this corridor, seafloor-disturbing activities related to cable installation may occur, up to a maximum vertical extent of 15 feet (4.7 m). At the sea-to-shore transition, the APE also includes workspaces where potential seafloor-disturbing activities associated with horizontal directional drilling (HDD), installation of an offshore cofferdam, and vessel anchoring may occur. The vertical extent of the APE within the sea-to-shore transition is 30 feet (9.1 m) below the seafloor. Offshore construction would be supported by shipping port use (see Figure 1).

Marine archaeological resources (shipwrecks and ancient submerged landforms) situated in the marine APE at the SFWF MWA and the SFEC corridor are depicted in Appendix B (Figures B-1 [Gray & Pape 2021: Figure 7] and B-2 [Gray & Pape 2021: Figure 6], respectively). Appendix B contains sensitive

historic property location information and, for this reason, is confidential and detached from the publicly available copies of the Finding.

2.3.2 Terrestrial Archaeological Resources Area of Potential Effects

The terrestrial archaeological resources portion of the APE (hereafter terrestrial APE) includes areas of potential ground disturbance associated with installation of the onshore export cable (Figure A-3 in Appendix A [provided by Environmental Design and Research (EDR)]). The sea-to-shore transition would connect via HDD to an onshore underground transition vault (Figure A-4 in Appendix A). Ground-disturbing activities from installation of the transition vault and associated HDD would occur at the Beach Lane landing alternative within a 1.8-acre (0.7-hectare [ha]) parcel at the terminus of Beach Lane in the town of East Hampton or at the Hither Hills beach landing alternative within a 0.14-acre (0.06-ha) parcel located at Hither Hills State Park. Other landing site alternatives in the COP are not under BOEM consideration (see Figure A-4). From the transition vault at either of the beach landing alternatives, SFW would install the onshore export cable underground within a 4-foot-wide (1.2-m-wide) × 8-foot-deep (2.4-m-deep) utility trench. The onshore cable alignment for either the Beach Lane route or the Hither Hills route would be located within both existing public road rights-of-way (ROWs) and the existing Long Island Railroad ROW. The onshore cable would connect to the proposed onshore substation parcel located adjacent to the existing East Hampton Substation on Cove Hollow Road, East Hampton. Ground-disturbing activities associated with construction of the new substation would occur within a 2.4-acre (0.97-ha) parcel. See Figure A-5 for an overview map with the onshore substation parcel and O&M facility boundaries showing the terrestrial APE. Confidential Appendix B depicts these areas in more detail.

The terrestrial APE also includes areas of potential ground disturbance associated with construction of the O&M facility. Two alternative locations are under consideration: a 338.6-acre (137-ha) parcel located within the Quonset Business Park in the Town of North Kingstown, RI, or a 6.7-acre (2.7-ha) parcel located at Montauk Harbor, East Hampton.

2.3.3 Area of Potential Effects for Visual Effects Analysis

The APE for visual effects analysis (hereafter viewshed APE) for the Project includes onshore coastal areas of Long Island, NY, RI, and MA (Figure A-5 in Appendix A). Geographic information system (GIS) analysis and subsequent field investigation delineated the viewshed APE methodically through a series of steps, beginning with the maximum theoretical distance that WTGs could be visible (EDR 2021). This was determined by first considering the visibility of a WTG from the water level to the tip of an upright rotor blade at a height of 840 feet. The analysis then accounted for how distance and curvature of the Earth impede visibility as the distance increases between the viewer and WTGs (i.e., by a 40-mile distance, even blade tips would be below the sea level horizon line). The mapping effort then removed all areas with obstructed views toward SFWF WTGs, such as those views impeded and obscured by intervening topography, vegetation, and structures. Areas with unobstructed views of offshore Project elements then comprised the APE (see shaded “APE for Visual Effects” areas for the SFWF Offshore Facility Viewshed on Figure A-5). Figure A-5 also depicts reasonably foreseeable future project areas for consideration of cumulative effects within the APE (from BOEM 2021a: Figure E-10). Figure B-3 maps the 10 properties that BOEM has determined would be subject to adverse effects in the viewshed APE.

Additionally, the viewshed APE includes onshore visibility within a 1-mile area surrounding the proposed onshore substation parcel and both O&M facility location alternatives at Quonset Point and Montauk Harbor (Figure A-5). Historic properties in and near these Project facilities are depicted in Appendix B (Figure B-4 [EDR 2018: Figure 9], Figure B-5 [EDR 2019a: Inset 3.1-1], and Figure B-6 [EDR 2019a: Inset 3.1-2] in Appendix A).

3 Steps Taken to Identify Historic Properties

3.1 Technical Reports

To support the identification of historic properties within the APE, SFW has provided survey reports detailing the results of multiple investigations within the marine, terrestrial, and viewshed portions of the APE. Table 2 provides a summary of these efforts to identify historic properties and the results/key findings of each investigation. BOEM has reviewed all reports summarized in Table 2 and found them to be sufficient. BOEM found that the APE identified by SFW is appropriate for the magnitude, extent, location, and nature of the undertaking. Further, BOEM has determined that the reports collectively represent a good faith effort to identify and evaluate historic properties within the APE, they are sufficient to apply the Criteria of Adverse Effect, and they support consultation with consulting parties regarding the resolution of adverse effects to historic properties.

Table 2. Summary of Cultural Resources Investigations Performed by SFW in the Marine, Terrestrial, and Viewshed APEs

Portion of APE	Report	Description	Key Findings/Recommendations
Offshore	<i>Marine Archaeological Resources Assessment - South Fork Wind Farm and Export Cable, Rhode Island and New York</i> (Gray & Pape 2020)	Intensive geophysical and geotechnical archaeological study of the marine APE for the SFWF, SFEC, and sea-to-shore transition	This investigation included a high-resolution geophysical marine survey using magnetometer/gradiometer, side-scan sonar, multibeam echo-sounder, and both shallow and medium penetration sub-bottom profilers and subsequent archaeological vibracoring and geoarchaeological analysis. The survey resulted in identifying four shipwreck archaeological sites within the SFWF MWA. No historic period marine archaeological resources were identified within the footprint of the SFEC. The survey additionally identified a total of 21 ancient submerged landforms. Of these, eight features are recommended as possessing higher probabilities for precontact site occurrence and preservation. Three features are located within the SFWF MWA and five are located within the SFEC.
Offshore	<i>South Fork Wind Farm and Export Cable Marine Archaeological Resources Assessment Addendum Memorandum</i> (Gray & Pape 2021)	Memorandum, most recently revised in June 2021, with updated recommendations on avoidability of ancient submerged landforms	Eight ancient submerged landforms and features were recommended as having high potential for precontact site occurrence, and avoidance is the preferred preservation measure for these features. SFW has evaluated its design and engineering options to avoid or minimize potential effects to shipwrecks, potential shipwrecks, and ancient submerged landform features. All shipwrecks would be avoided. Three ancient submerged landforms would be avoided at the SFWF, but five ancient submerged landform features at the SFEC cannot necessarily be avoided. Note that although further investigation might be needed to evaluate the NRHP eligibility of these marine resources, BOEM has determined these properties to be NRHP-eligible. The five ancient submerged landform features that cannot be avoided by Project activities would be adversely affected.

Portion of APE	Report	Description	Key Findings/Recommendations
Onshore	<i>Archaeological Assessment: Operations and Maintenance Facilities - South Fork Wind Farm Rhode Island & New York, U.S.</i> (EDR 2019b)	Assessment of archaeological potential conducted for three alternative locations proposed for O&M facilities: two at Quonset Point, RI, and one at Montauk Harbor, East Hampton, NY	The Quonset Point O&M facility site falls within the Quonset Business Park, which includes a NRHP-eligible property within its boundaries: the Quonset Point Naval Air Station. The Quonset Point Naval Air Station currently serves as a RI Air National Guard Base, an active military base with modern structures and equipment. As a result of land development since the mid-twentieth century, the Quonset Point O&M facility site possesses low potential for intact/undisturbed archaeological resources. Although the proposed construction site falls within a known NRHP-eligible property, the potential for ground-disturbing activities to effect buried cultural resources is low because the area of proposed construction has been previously disturbed and/or is fill material. The Montauk Harbor O&M facility site location has no previously identified archaeological resources within it. This site was developed in the mid-twentieth century as a working harbor and seafood operation and is currently occupied by a small commercial fishing and packing business. As a result of the use of dredge fill in some portions and land development from the mid- through late twentieth century overall, this site possesses low potential for archaeological resources, as does the adjacent seabed where additional dredging is proposed; therefore, no additional archaeological investigations are recommended.
Onshore	<i>Phase I Archaeological Survey for the South Fork Export Cable - Onshore Cable & Substation</i> (EDR 2019c)	Phase I archaeological survey for the onshore components of the SFEC to identify terrestrial archaeological sites	A Phase I archaeological survey was conducted for the onshore interconnection facility, SFEC corridor, and SFEC landfall locations and alternatives. The survey included an archaeological sensitivity assessment of the potential upland routes of SFEC onshore, archaeological testing of two landing sites and routes, and the proposed onshore substation. No archaeological sites were identified at the locations proposed for the substation landing sites or along the cable routes currently under consideration in the Project alternatives. Additional archaeological testing was concluded necessary along the Beach Lane – Route A alternative, the results of which are documented in the Phase IB archaeological survey report.
Onshore	<i>Phase IB Archaeological Survey: South Fork Export Cable: Beach Lane - Route A</i> (EDR 2020a)	Phase IB archaeological survey to identify subsurface terrestrial archaeological sites	A Phase IB supplemental archaeological survey was conducted along the public roads of the Beach Lane – Route A alternative. Investigations included hand excavation of shovel test pits within the grassy and unpaved portions of the road ROWs adjacent to the pavement. Systematic shovel tests were conducted for a portion of the Beach Lane – Route A alternative. No significant archaeological resources were identified.

Portion of APE	Report	Description	Key Findings/Recommendations
Onshore and Viewshed	<i>Historic Architectural Resources Survey: South Fork Export Cable Onshore Substation</i> (EDR 2018)	Study identifying potential historic resources within 1 mile of the proposed new onshore substation located adjacent to National Grid's existing East Hampton substation	The visual effects analysis is based on the 1-mile-diameter circle around proposed onshore substation facilities. Within that circle, the APE was refined using GIS modeling of the viewshed, which took into account the true visibility of the Project (e.g., visual barriers such as topography, vegetation, and non-historic structures that obstruct the visibility of the Project). The report identified 16 built resources within 1 mile of the proposed onshore substation. Resources included NRHP-listed, NRHP-eligible, and non-historic aboveground properties. Construction of the proposed onshore substation would not require the demolition or physical alteration of any aboveground historic properties, nor would its construction result in a significant change in the existing visual character or scenic quality of the 1-mile APE. Therefore, the proposed onshore substation would not have a negative effect on the visual setting associated with historic architectural resources.
Viewshed	<i>Historic Resources Visual Effects Analysis Operations and Maintenance Facilities – South Fork Wind Farm Rhode Island & New York, US</i> (EDR 2019a)	Report analyzing the viewsheds surrounding the O&M facilities proposed for Montauk Harbor and Quonset Business Park/Quonset Point	The visual effects analysis is based on the 1-mile-diameter circle around proposed onshore O&M facilities at the Montauk Harbor and Quonset Business Park/Quonset Point site options. Within that circle, the APE was refined using GIS modeling of the viewshed, which took into account the true visibility of the Project (e.g., visual barriers such as topography, vegetation, and non-historic structures that obstruct the visibility of the Project). At the Montauk Harbor O&M facility site, the three historic properties in the APE for visual impact analysis consist of one that is NRHP listed and two that are NRHP eligible. At the Quonset Business Park/Quonset Point O&M facility site, the one historic property within the APE for visual impact analysis is NRHP eligible. The results of the viewshed analysis concluded that the SFWF onshore support facilities would have negligible visual effects on the historic resources located within the APE.

Portion of APE	Report	Description	Key Findings/Recommendations
Viewshed	<i>Historic Resources Visual Effects Analysis. Revised. South Fork Wind Farm New York/Rhode Island, US (HRVEA) (EDR 2021)</i>	Report analyzing the viewsheds from the WTGs and OSS through GIS modeling to determine the area of Project visibility and define the APE for historic properties sensitive to visual effects	<p>The visual impact analysis was based on the 40-mile-radius around the SFWF MWA, within which the extent of the APE was defined by the viewshed of WTGs using GIS modeling and field observations, taking into account the true visibility of the Project (e.g., visual barriers such as topography, vegetation, and non-historic structures that greatly reduce the visibility of Project WTGs). Modeling included an analysis of the visibility of a WTG from the water level to the tip of an upright rotor blade at a height of 840 feet and took into account how distance and curvature of the Earth affect visibility as space increases between the viewing point and WTGs. The HRVEA for the WTGs and OSS identified 113 historic properties in the viewshed APE. Of the 113 historic properties in the APE with potential views to the Project, 39 are listed on the NRHP, of which seven are NHLs. The remaining 74 are considered eligible for listing on the NRHP. Of these, 33 are in RI, and 41 are in MA. The revision also described the range of resources with potential visibility and concluded that most of the properties would not be adversely affected by the Project. Properties that EDR (2021) concluded to be adversely affected consist of Block Island South East Lighthouse NHL, Gay Head Light, Gay Head – Aquinnah Shops, The Breakers, Marble House, Bellevue Avenue Historic District, Ocean Drive Historic District, Ocean Road Historic District, Capt. Mark L. Potter House, and Vineyard Sound and Moshup’s Bridge TCP.</p> <p>[Note: As described below, BOEM has determined that five of the properties that the HRVEA identified along the mainland RI coast and Newport County would not be adversely affected. BOEM has also found that additional properties would be adversely affected at Block Island, where the HRVEA did not. Although the HRVEA identified five different historic properties toward mainland RI where it considered adverse effects might result, BOEM has found no adverse effects to The Breakers NHL, Marble House NHL, Bellevue Avenue Historic District NHL, Ocean Road Historic District NHL, and Ocean Drive Historic District (NRHP listed). BOEM’s assessment of effects is described in the Finding at 4.1.1 Assessment of Effects to Historic Properties in the Viewshed Area of Potential Effects.]</p>

Consequent to the reports prepared for the COP submittal, SWCA Environmental Consultants (SWCA) prepared a technical report for BOEM to support BOEM’s cumulative effects analysis, the *Cumulative Historic Resources Visual Effects Analysis – South Fork Wind Farm and South Fork Export Cable Project* (CHRVEA) (SWCA 2021a). The CHRVEA presents the analysis of cumulative visual effects where BOEM has determined in its review of the *Historic Resources Visual Effects Analysis. Revised. South Fork Wind Farm New York/Rhode Island, US* (HRVEA) (EDR 2021) that historic properties would be adversely affected by the Project. The effects of other reasonably foreseeable wind energy development activities are additive to those adverse effects from the Project itself, resulting in cumulative effects. Ten historic properties in the offshore viewshed APE for the Project would be adversely affected, and the addition of other reasonably foreseeable offshore wind energy development activities (see Appendix E in the South Fork EIS) would result in cumulative effects to these ten properties. These 10 historic properties are Block Island South East Lighthouse NHL, Old Harbor Historic District, Spring House Hotel, Spring Street Historic District, Spring House Hotel Cottage, Capt. Mark L. Potter House, Vaill Cottage, Gay Head Light, Gay Head - Aquinnah Shops, and Vineyard Sound and Moshup’s Bridge TCP.

3.2 Consultation and Coordination with the Parties and the Public

3.2.1 Early Coordination

Since 2009, BOEM has coordinated OCS renewable energy activities for the RI-MA WEAs with its federal, state, local, and tribal government partners through its intergovernmental Renewable Energy Task Force. BOEM has met regularly with federally recognized Native American Tribes (Tribes) that may be affected by renewable energy activities in the area since 2011, specifically during planning for the issuance of leases and review of site assessment activities. BOEM also hosts public information meetings to update interested stakeholders on major renewable energy milestones. Information on BOEM’s RI-MA Renewable Energy Task Force meetings is available at <https://www.boem.gov/Massachusetts-Renewable-Energy-Task-Force-Meetings>, and information on BOEM’s stakeholder engagement efforts is available at <https://www.boem.gov/renewable-energy/state-activities/public-information-meetings>.

3.2.2 National Environmental Policy Act Scoping and Public Hearings

On March 19, 2018, BOEM announced its notice of intent (NOI) to prepare an EIS for the SFW COP (BOEM 2018). The purpose of the NOI was to solicit input on issues and potential alternatives for consideration in the COP. Throughout the scoping process, federal agencies; state, tribal, and local governments; other interested parties; and the public had the opportunity to help BOEM determine significant resources and issues, impact-producing factors, reasonable alternatives, and potential mitigation measures to be analyzed in the EIS as well as provide additional information. BOEM also used the NEPA commenting process to allow for public involvement in the NHPA Section 106 consultation process (54 USC 300101 et seq.), as permitted by 36 CFR 800.2(d)(3). Through this notice, BOEM announced that it would inform its NHPA Section 106 consultation using the NEPA commenting process and invited public comment and input regarding the identification of historic properties or potential effects to historic properties from activities associated with approval of the SFW COP.

Additionally, BOEM held public scoping meetings, which included specific opportunities for engaging on issues relative to NHPA Section 106 for the SFW COP, at the places and dates listed below.

- Amagansett, NY; Monday, November 5, 2018
- New Bedford, MA; Wednesday, November 7, 2018
- Narragansett, RI; Thursday, November 8, 2018

Through this NEPA scoping process, BOEM received comments related to cultural, historic, archaeological, or tribal resources. Comments indicated that the EIS should assess potential onshore impacts to archaeological and historic resources at Project locations in NY (SWCA 2021b:9). BOEM’s EIS scoping report includes these comments and is available at https://www.boem.gov/sites/default/files/documents/renewable-energy/Scoping-Summary_0.pdf.

On January 8, 2021, BOEM published a notice of availability for the draft EIS for the COP submitted by SFW. As part of this process, BOEM held public hearings Tuesday, February 9; Thursday, February 11; and Tuesday, February 16, 2021. Due to COVID-19 restrictions, all of these public hearings were held virtually. The public comment period closed on February 22, 2021. Comments received on the draft EIS related to cultural, historic, archaeological, or tribal resources are similar to or reiterate those received from consulting parties during NHPA Section 106 consultation. BOEM’s review and consideration of comments received during scoping and on the draft EIS have informed this Finding and are not repeated herein; those scoping and EIS documents are available at <https://www.boem.gov/renewable-energy/state-activities/south-fork>. Comments received from consulting parties during NHPA Section 106 consultation may contain sensitive information on the character and location of properties and BOEM is safeguarding this confidential information as specified at 36 CFR 800.11(c)(1).

3.2.3 National Historic Preservation Act Section 106 Consultation

BOEM extended invitations to consult under NHPA Section 106 on review of the Project COP via letter on May 29, 2019, to 40 potential consulting parties. Throughout spring 2020, as third-party consultant to BOEM, SWCA followed up with these parties to confirm preferred points of contact and interest in participating. The organizations BOEM invited to consult are listed in Table 3.

Table 3. Parties Invited to Participate in NHPA Section 106 Consultation

Participants in the NHPA Section 106 Process	Invited Consulting Parties
SHPOs and state agencies	RI Historical Preservation & Heritage Commission (RI SHPO)
	NY State Division for Historic Preservation (NY SHPO)
	MA Historical Commission (MA SHPO)
	MA Board of Underwater Archaeological Resources
	MA Commission on Indian Affairs

Participants in the NHPA Section 106 Process	Invited Consulting Parties
Federal agencies	ACHP
	National Park Service (NPS)
	U.S. Army Corps of Engineers, New England District and NY District
Federally recognized Tribes	Wampanoag Tribe of Gay Head (Aquinnah)
	Mohegan Tribe of Indians of Connecticut
	Narragansett Indian Tribe
	Mashantucket Pequot Tribal Nation
	Mashpee Wampanoag Tribe
	Shinnecock Indian Nation
	Delaware Tribe of Indians
	Delaware Nation
Non-federally recognized Tribes	Chappaquiddick Tribe of the Wampanoag Nation
	Unkechaug Nation
Local governments	Town of West Tisbury, MA
	Town of East Hampton and East Hampton Town Trustees, NY
	Town of Chilmark, MA
	Town of Little Compton, RI
	Town of Narragansett, RI
	Town of New Shoreham, RI
	Town of Newport, RI
	Town of Aquinnah, MA
	Town of Charlestown, RI
	Town of Edgartown, MA
	Town of Gosnold, MA
	Town of Westerly, MA
	Town of South Kingstown, RI
	Town of Jamestown, RI
	Cape Cod Commission, MA

Participants in the NHPA Section 106 Process	Invited Consulting Parties
Nongovernment organizations or groups	Gay Head Lighthouse Advisory Committee
	Southeast Lighthouse Foundation
	Block Island Historical Society
	Martha's Vineyard Commission
	Alliance to Protect Nantucket Sound
	Montauk Historical Society
	Preservation Massachusetts
	SFW (Ørsted) (the applicant for federal approval)

On June 29, 2020, BOEM again contacted responsive governments and organizations in the list above, providing information on the proposed undertaking, and re-extending the invitation to be a consulting party to the NHPA Section 106 review of the COP. The information provided to consulting parties beginning June 29, 2020, included technical reports listed in Table 2 that were prepared for historic property identification in an appendix to the COP. Entities that responded to BOEM's invitation or were subsequently made known to BOEM and added as consulting parties are listed in Table 4.

Table 4. Consulting Parties Participating in NHPA Section 106 Consultation

Participants in the NHPA Section 106 Process	Participating Consulting Parties
SHPOs and State Agencies	RI Historical Preservation & Heritage Commission (RI SHPO)
	NY State Division for Historic Preservation (NY SHPO)
	MA Historical Commission (MA SHPO)
	MA Board of Underwater Archaeological Resources
Federal Agencies	ACHP
	NPS
	U.S. Army Corps of Engineers, New England District and NY District
Federally Recognized Tribes	Wampanoag Tribe of Gay Head (Aquinnah)
	Mohegan Tribe of Indians of Connecticut
	Narragansett Indian Tribe
	Mashantucket Pequot Tribal Nation
	Mashpee Wampanoag Tribe
	Shinnecock Indian Nation
	Delaware Tribe of Indians
	Delaware Nation

Participants in the NHPA Section 106 Process	Participating Consulting Parties
Non-Federally Recognized Tribes	Chappaquiddick Tribe of Wampanoag Nation
	Unkechaug Nation
Local Governments	Town of West Tisbury, MA
	Town of East Hampton and East Hampton Town Trustees, NY
	Town of Chilmark, MA
	Town of Aquinnah, RI
	Town of Little Compton, RI
	Town of Narragansett, RI
	Town of New Shoreham, RI
Nongovernment Organizations or Groups	Gay Head Lighthouse Advisory Committee
	Southeast Lighthouse Foundation
	Block Island Historical Society
	Newport Restoration Foundation
	SFW (Ørsted) (the applicant for federal approval)

On January 15–17, July 21 and 27, and August 20, 2020; and on March 12 and April 9, 2021, BOEM met with federally recognized Tribes to simultaneously discuss multiple BOEM actions, including about the Project and taking into account the effects of Project on historic properties under NHPA Section 106; see EIS Appendix A at *Government-to-Government Consultation with Federally Recognized Indian Tribes*. The Mohegan Tribe of Indians of Connecticut, the Mashantucket Pequot Tribal Nation, the Narragansett Indian Tribe, the Wampanoag Tribe of Gay Head (Aquinnah), the Mashpee Wampanoag Tribe, and the Delaware Tribe of Indians participated in these meetings. BOEM continues to consult with these and other Tribes on developments in offshore wind and the Project. Additional government-to-government consultations are planned for the future.

In correspondence and subsequent consultation meetings, BOEM requested information from consulting parties on defining the APE and identifying historic properties potentially affected by the proposed undertaking. BOEM held an initial NHPA Section 106 consultation meeting with consulting parties by webinar on September 29, 2020, reviewing the Project background and the identification of historic properties, as presented in previously provided technical reports. On January 8, 2021, the CHRVEA was distributed to consulting parties, and on February 26, 2021, updated copies of the CHRVEA, the SFEC Phase 1B archaeological survey report, and the *South Fork Wind Farm and Export Cable Marine Archaeological Resources Assessment Addendum Memorandum* (MARA addendum) (see Table 2) were distributed to consulting parties. BOEM held a second NHPA Section 106 consultation meeting with consulting parties by webinar on March 11, 2021, reviewing updated technical report information and the agency’s preliminary adverse effect assessments. BOEM provided a revised CHRVEA and the draft Finding to consulting parties beginning May 3, 2021, and Addendum 1 to the Finding beginning May 28, 2021. BOEM held the third NHPA Section 106 consultation meeting with consulting parties via webinar on June 29, 2021, reviewing updates to technical reports since the last meeting. BOEM’s finding of

effects, and next steps for resolving adverse effects. A meeting summary and access to a recording of the meeting was made available to consulting parties following each meeting. BOEM provided a revised MARA addendum to consulting parties on June 29, 2021, prior to distributing the final Finding.

BOEM plans to continue consulting with the SHPOs, ACHP, NPS, and the consulting parties to seek their comments and input regarding the effects of the undertaking on historic properties and on the resolution of adverse effects including the development and implementation of a memorandum of agreement (MOA).

4 Application of the Criteria of Adverse Effect

The Criteria of Adverse Effect under NHPA Section 106 (36 CFR 800.5(a)(1)) states that an undertaking has an adverse effect on a historic property when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5(a)(1)). According to the regulations (36 CFR 800.5(a)(2)), adverse effects on historic properties include, but are not limited to,

- i. physical destruction of or damage to all or part of the property;
- ii. alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68) and applicable guidelines;
- iii. removal of the property from its historic location;
- iv. change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- v. introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- vi. neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian Tribe [Tribes] or Native Hawaiian organization; and
- vii. transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

4.1 Adversely Affected Historic Properties

BOEM has determined that the undertaking would have an adverse effect on the following 10 historic properties within the viewshed APE:

- Block Island South East Lighthouse (NHL), RI
- Old Harbor Historic District (NRHP listed), RI
- Spring House Hotel (NRHP eligible), RI
- Spring House Hotel Cottage (NRHP eligible), RI
- Spring Street Historic District (NRHP eligible), RI
- Capt. Mark L. Potter House (NRHP eligible), RI
- Vaill Cottage (NRHP eligible), RI
- Gay Head Light (NRHP listed), MA
- Gay Head – Aquinnah Shops (NRHP eligible), MA
- Vineyard Sound and Moshup's Bridge TCP (NRHP eligible), MA

Additionally, BOEM has determined that the undertaking would have an adverse effect on five historic properties due to physical disturbance within the marine APE.

- SFEC-CF-3
- SFEC-CF-5
- SFEC-CF-7
- SFEC-CF-9
- SFEC-CF-13

Consulting parties have expressed that the view of the undeveloped ocean is integral to the character of the Block Island South East Lighthouse NHL and Gay Head Light historic properties as well as other Block Island historic properties, such as the Old Harbor Historic District (summarized in Addendum 1). The Wampanoag Tribe of Gay Head (Aquinnah) and the MA SHPO have indicated that there exist multiple cultural places and features potentially affected by the undertaking in relation to the Vineyard Sound and Moshup's Bridge TCP.

During consultation meetings, federally recognized Tribes, a historical MA Tribe, and a NY state-recognized Tribe have stated that ancient submerged landforms are culturally significant resources as the lands where their ancestors lived and as locations where events described in tribal histories occurred. BOEM has determined these five ancient submerged landform features are individually eligible for listing on the NRHP as sites (as in habitation sites and not archaeological sites). They are eligible under Criterion A for their associations with the ancient Native American exploration and settlement of the continental shelf, tied to the traditions of consulting tribes, and under Criterion D for the potential to yield important cultural, historical, and scientific information through archeology, history, and ethnography about ancient human opportunities for resource access, settlement, mobility, and land use prior to 8,000 BP. Consistent with other findings for ancient submerged landforms in the RI-MA WEAs:

If archaeological resources are present within the identified ancient landforms and they retain sufficient integrity, these resources could be eligible for listing on the NRHP under Criterion D. During the last glacial maximum, at around 24,000 [years] before present (B.P.), sea levels dropped approximately 55 to 26 m (180 to 85 ft) below today's level. Sea level did not reach a near modern level until approximately 3,000 [B.P.] in the New England area. Consequently, a large amount of land on the OCS was exposed and existed as terrestrial land during the late Pleistocene and early Holocene. Native American oral histories and archaeological evidence demonstrate that Native American populations were present in the New England region, over 160 km (86.89 nm) inland from the coast at the time that the OCS was exposed. It is logical to assume that these people would have also occupied the now-submerged landscape on the OCS. . . . Due to current technological constraints, very little archaeological information has been recovered from Late Pleistocene and early Holocene archaeological sites on the OCS. As a result, very little archaeological material has been recovered related to Native American adaptations and lifeways on the then coastal plain and coast. Any archaeological information preserved within these sites, if present, would likely yield significant information important in the pre-contact history of the region, making the sites eligible for NRHP listing under Criterion D. (BOEM 2020:35)

4.1.1 Assessment of Effects to Historic Properties in the Viewshed Area of Potential Effects

The 10 adversely affected historic properties within the viewshed APE retain their maritime setting, and that maritime setting contributes to the properties' NRHP eligibility. Each property continues to offer significant seaward views that support the integrity of its maritime setting. Those seaward views include vantage points with the potential for an open view from each property toward the SFWF's offshore Project elements (EDR 2021). For historic properties where BOEM has determined the Project would cause adverse effects, BOEM then assessed whether those effects would be additive to the potential adverse effects of other reasonably foreseeable actions, thereby resulting in cumulative effects (see SWCA 2021a). Since the Project would affect these 10 historic properties similarly, the analysis herein presents the assessment of effects collectively rather than individually by property.

BOEM reviewed the HRVEA's list of historic properties assessed as likely to be adversely affected by the Project and all information and comments provided by consulting parties in correspondence and at meetings to inform determinations of adverse effects including visual and cumulative effects. The southeastern shoreline of Block Island begins at just over 19 miles from possible SFWF WTG locations, and the southwestern shores of Martha's Vineyard begin at 20 miles from possible SFWF WTG locations (rounding to whole miles). The 10 historic properties determined to be adversely affected represent all of the properties identified within this distance that retain a maritime setting and where the maritime setting contributes to each property's NRHP eligibility. These historic properties are in areas of elevated seaside bluffs offering significant seaward views that support the integrity of the maritime setting and vantage points with the potential for open views from each property toward the SFWF WTGs (EDR 2021). The Vineyard Sound and Moshup's Bridge TCP is the only one of these 10 properties where the identified boundary extends within less than 18 miles of proposed SFWF WTGs, reaching to within nearly 13 miles of the Project, [REDACTED]. The Vineyard Sound and Moshup's Bridge TCP is a complex landscape and seascape of culturally important features that intersect other TCPs in the vicinity but are situated beyond the extent of visual effects for the Project, including the Nantucket Sound TCP and the Chappaquiddick Island TCP (EDR 2021). Each of the 10 adversely affected historic properties is within 20 miles (rounding to whole miles) of potential SFWF WTG locations (Figure B-3 in Appendix B). The HRVEA found that "offshore wind energy projects of typical magnitude would have minimal visual effects at a distance of 20 miles and negligible effects beyond 25 miles" (EDR 2021:9). BOEM's analysis found that adverse effects would tend to result within 20 miles of WTGs, to properties on elevated seaside bluffs that offer open vantage points within the APE, and through the introduction of modern visual elements that diminish the integrity of the properties' character-defining elements.

BOEM has determined that options to reduce the number of SFWF WTGs under any action alternative for the Project (Table 1) would effectively minimize visual effects because there would be less WTGs constructed and visible from the affected historic properties. However, none of the alternatives would completely avoid visual adverse effects, resulting in the same 10 historic properties being adversely affected.

Cumulative effects analysis quantified the total number of WTGs from all planned future developments theoretically visible (daytime or nighttime) within the APE (EDR 2020b). This analysis projected that the

development of additional wind farms in the RI-MA WEA would result in the construction of nearly 1,000 WTGs (BOEM 2021a; SWCA 2021). Of these, up to 564 WTGs (inclusive of SFWF WTGs) would be visible from the 10 adversely affected historic properties within the viewshed APE. Upon the conceptual full build-out of all 564 WTG locations, the Project would comprise approximately 3% of the total visible WTGs. With only 15 WTGs proposed, the scale of the SFWF is small in comparison to most other reasonably foreseeable wind energy developments in adjacent lease areas, some of which propose nearly 100 WTGs each.

In the cumulative analysis, SFWF would be surrounded by other proposed wind farms, resulting in other projects' WTGs being closer to onshore historic properties and more visible than the SFWF WTGs. This includes consideration of the effects of the Project in relation to the existing Block Island Wind Farm (BIWF), which begins just over 3 miles south-southeast of Block Island (Figure 2) (EDR 2020b; SWCA 2021a). The nature and contribution of SFWF WTGs to cumulative visual effects (daytime and nighttime) on historic properties would be proportionately small in magnitude and extent when combined with past, present, and reasonably foreseeable offshore wind energy development activities in the viewshed APE (SWCA 2021a).

BOEM has found that the Project would have adverse visual effects on Block Island South East Lighthouse NHL, Old Harbor Historic District, Spring House Hotel, Spring House Hotel Cottage, Spring Street Historic District, Capt. Mark L. Potter House, Vaill Cottage, Gay Head Light, Gay Head – Aquinnah Shops, and Vineyard Sound and Moshup's Bridge TCP. Per the Criteria of Adverse Effect, the undertaking would introduce visual Project elements that diminish the integrity of these properties' significant historic features. BOEM did, however, determine that due to the distance and open viewshed, the integrity of the properties would not be so diminished as to disqualify any of them for NRHP eligibility.

Although the HRVEA identified five other historic properties on mainland RI where it considered adverse effects might result—The Breakers NHL, Marble House NHL, Bellevue Avenue Historic District NHL, Ocean Road Historic District NHL, and Ocean Drive Historic District (NRHP listed)—these properties are all at distances of between 25 and 26 miles from the nearest proposed SFWF WTG (EDR 2021). While their size and siting may afford these historic properties some view toward the Lease Area, other existing buildings, vegetation, and elements of the built environment at each result in limited, screened views and increased presence of existing nighttime lighting. The shortest distance between any of these historic properties and the nearest potential WTG location is over 25 miles. Visibility would be especially minimized by distance. At these distances, atmospheric, environmental, and other obscuring factors, such as fog, haze, sea spray, wave height, and normal viewer acuity, serve to further minimize the visual intrusion posed by offshore WTGs. The ability of these historic properties to convey the significance of their architectural and social history would be unaltered by the Project. BOEM finds that the undertaking would result in no adverse to these and other historic properties within the viewshed APE with limited to no views of SFWF WTGs.

Visual effects assessments found that the Project would not adversely affect the remaining 98 historic properties identified in the viewshed APE identified in HRVEA (EDR 2021) or the four historic properties in the viewshed APE identified near O&M facility locations (EDR 2019a) (see summary in Table 2). BOEM agrees with this assessment and has determined that the Project would result in no

adverse effects to any historic properties identified in the viewshed APE beyond the 10 historic properties identified as adversely affected at the end of Section 3.1 above.



Figure 2. Comparative size of SFWF and BIWF WTGs with distance.

Note: The BIWF WTG (about 738 feet tall), standing at right, would appear to be about 1 inch high to a viewer at 3.5 miles distant. SFWF WTGs (about 840 feet tall), simulated at left, would appear to be 3/8-inch high (62.5% smaller) to a viewer at 20.6 miles distant. This image, when presented at 100 percent size (8.5 x 11 inch landscape page size), is meant to be viewed at approximately 20 inches away and was photographed with a camera set at 5.5-foot viewing height (EDR 2021, Viewpoint 4B: View from New Shoreham Beach, New Shoreham; see also EDR 2020c). The field of view is fit to frame the WTG examples within the page size.

4.1.2 Assessment of Effects to Historic Properties in the Marine APE

Archaeological surveys within the marine APE identified four shipwrecks and eight ancient submerged landforms and features within the SFWF MWA (Gray & Pape 2020). All four wrecks/possible wrecks would be avoided with sufficient buffers by all proposed Project activities that are part of the undertaking, and as a result, there would be no effects to these potential historic properties (Gray & Pape 2021). SFW has established a protective buffer extending 50 m beyond each conservatively delineated shipwreck and would avoid seabed-disturbing activities within this buffer during construction, operations, and decommissioning activities (Gray & Pape 2021). BOEM has determined the protective buffer to be sufficient and would require its implementation as a condition of approval if the COP is approved.

Of the eight ancient submerged landforms and features, three are located within the SFWF MWA, and five are located within the SFEC. The three at the SFWF would be avoided; however, the five at the SFEC may not be avoidable by Project actions (Gray & Pape 2021). The ancient submerged landform features are discrete and discontinuous locations that may contain preserved evidence of formerly terrestrial landscape features that have survived erosion during marine transgression. Although these landforms and features exhibit high archaeological potential, no evidence of human occupation associated with the ancient submerged landforms was identified in core samples taken during the submerged cultural resources investigation (Gray & Pape 2020:6-5). These landforms and features may derive their significance from reasons other than their archaeological potential, such as their potential contribution to a broader culturally significant landscape.

BOEM has found that the Project would result in adverse effects to the five ancient submerged landform features at the SFEC. In the terms of the Criteria of Adverse Effect, the undertaking would result in irreversible physical damage to these five ancient submerged landform features (SFEC-CF-3, SFEC-CF-5, SFEC-CF-7, SFEC-CF-9, and SFEC-CF-13).

Effects from other reasonably foreseeable offshore development activities in and along cable corridors from the RI-MA WEA would add to the effects from the SFEC to ancient submerged landform features on this portion of the OCS. This would result in cumulative effects across ancient submerged landforms in the area. SFW anticipates being able to avoid ancient submerged landforms when siting SFWF structures; however, the routing of the export cable is subject to more constraints than the siting of WTGs, inter-array cables, or the OSS. The SFWF and SFEC are estimated to result in 913 acres of cabling-related seabed disturbance, and BOEM estimates an additional 10,131 acres of cabling-related disturbance for all other future offshore wind projects, including anchoring needs during construction (BOEM 2021a). The amount of seabed disturbance provides a relative indicator of the potential for effects on ancient submerged landforms; as seabed disturbance area increases, the likelihood of unavoidable effects to ancient submerged landforms may increase. Taken together, other reasonably foreseeable offshore wind projects would result in over 90% of the cabling-related seabed disturbance, with the SFW Project contributing less than 10% of the cabling-related seabed disturbance.

4.1.3 Assessment of Effects to Historic Properties in the Terrestrial APE

No historic properties were identified within the terrestrial APE (see Table 2). Therefore, BOEM finds no historic properties of this type affected.

5 Measures to Avoid, Minimize, and Mitigate Adverse Effects

BOEM would stipulate avoidance of historic properties identified in the APE and not currently found to be subject to adverse effects from the Project. For unavoidable adverse effects to historic properties, additional minimization and mitigation measures would be developed in consultation with the appropriate parties. These measures would be implemented through execution of an MOA by BOEM, the required signatories, invited signatories, and consulting parties to resolve adverse effects under Section 106 of the NHPA. Examples of minimization measures could include the use of aircraft detection lighting systems (ADLSs) to reduce the effect of nighttime lighting or use of a mechanical cutter, mechanical plow, and/or jet plow to install cables to minimize the amount of seabed impacts (BOEM 2021a). Examples of mitigation measures could include additional investigations or other measures to collect more information to understand the historic and archaeological context of affected historic properties. A post-review discovery plan, that SFW would implement during Project construction, would be a requirement of the MOA (pursuant to 36 CFR 800.13) to ensure that new historic properties not previously identified and impacts to unanticipated historic properties are considered appropriately. The MOA would contain all measures identified to avoid, minimize, and mitigate adverse effects on historic properties from the Project.

5.1 Avoidance

The NHPA Section 106 process requires BOEM to seek ways to avoid, minimize, or mitigate the adverse effects of the Project that would result from its approval of the COP (the undertaking). BOEM is approaching this process sequentially, beginning with avoidance. Avoidance of adverse effects is preferred and prioritized where practicable. Measures planned to date to avoid adverse effects consist of the following:

Marine Archaeological Properties

- Project design measures would avoid construction of facilities at the seven marine archeological resources within the SFWF Lease Area (three ancient submerged landforms and four potential shipwrecks).

Aboveground Historic Properties

- Obscuration, such as by curvature of the Earth and atmospheric and environmental factors like fog, haze, sea spray, and wave height, is enhanced with increasing distances between WTGs and historic properties. These factors would avoid effects to 103 of the 113 properties identified in the APE by the HRVEA, including six NHLs, and would avoid effects to all four historic properties in the viewshed APE near O&M facilities.

5.2 Minimization

Minimization efforts would proceed to reduce the level of any unavoidable adverse effects. However, minimization cannot eliminate adverse effects, it can only reduce them. Measures planned to date to minimize adverse effects consist of the following:

Marine Archaeological Properties

- Limitation of the construction footprint and work areas at the five adversely affected ancient submerged landform features in the SFEC construction corridor, to the extent practicable.
- Installation of the SFEC using equipment such as a mechanical cutter, mechanical plow, and/or jet plow, which compared to open cut dredging, would minimize sediment disturbance and alteration of the seabed by reducing the potential construction footprint.
- Burial of the SFEC to a target depth of 4 to 6 feet (1.2 to 1.8 m), and no more than 15 feet, to avoid or minimize impacts to any deeply buried archaeological deposits.
- Pre-construction investigations at these ancient submerged landform features to refine avoidance and minimization of effects to significant archaeological resources, such as a specification within a historic properties treatment plan under the proposed MOA.
- Post-review discovery plan included in the MOA that would include stop-work and treatment procedures for cultural material encountered during Project installation.

Aboveground Historic Properties

- Planned distance of the SFWF Lease Area from adversely affected aboveground properties, minimizing the relative scale and prominence of visible WTGs.
- Uniform WTG design, speed, height, and rotor diameter to reduce visual contrast.
- Uniform spacing of 1 nm (1.15 mile) to decrease visual clutter, consistent with spacing across the RI-MA WEAs, aligning WTGs to allow for safe transit corridors.
- The option to reduce the number of constructed WTGs from a maximum proposed number of 15 (the Fisheries Habitat Impact Minimization alternative; see the South Fork FEIS, published August 16, 2021).
- Lighting and marking in compliance with BOEM's *Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development* (BOEM 2021b).
 - Paint color RAL 9010 Pure White or RAL 7035 Light Grey to blend with background sea and skies.
 - Flashing lighting instead of steady lighting where practicable.
 - Use of ADLSs (subject to approval by the Federal Aviation Administration) to drastically limit the time in which WTG lights are on and visible from adversely affected properties (ADLS lighting would reduce the nighttime lighting to less than 1% of the time that standard aircraft warning lights would be lit, on average, during Project operation [BOEM 2021a]).

5.3 Mitigation

Remaining adverse effects after all avoidance and minimization efforts are employed would persist in the long term and be permanent. The diminished integrity of historic properties from the Project would not be corrected by mitigation measures.

Resolutions of adverse effect from the Project might correct other impacts or threats to historic properties, such as through property preservation or rehabilitation measures. Other mitigation for diminished

integrity would focus on replacing lost historic resource values with outcomes that are in the public interest, such as through development of products that convey the important history of the property.

Any potential mitigation of remaining, unavoidable adverse effects to Block Island South East Lighthouse NHL would reflect the heightened, national importance of the property and would be appropriate in magnitude, extent, nature, and location of the adverse effect. At Gay Head Light, any treatment plan would specifically require Massachusetts Historical Commission approval under the preservation restriction in Massachusetts General Law, Chapter 184, Section 31-33 and must be consistent with the Secretary of Interior's Standards for Rehabilitation (36 CFR 67). Preservation actions at any affected properties would be in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings* (NPS 2017) and be determined in consultation with the appropriate parties.

The NHPA Section 106 consultation process is ongoing for the SFWF Project and would culminate in the final MOA detailing measures to resolve adverse effects to historic properties, as agreed upon by the signatories, invited signatories, and consulting parties (pursuant to 36 CFR 800). BOEM would continue to consult in good faith with the consulting parties to resolve adverse effects.

6 National Historic Landmarks and the NHPA Section 106 Review Process

The NPS, which administers the NHL program for the Secretary of the Interior (Secretary), describes NHLs and the requirements for NHLs as follows:

National Historic Landmarks (NHL) are designated by the Secretary under the authority of the Historic Sites Act of 1935, which authorizes the Secretary to identify historic and archaeological sites, buildings, and objects which “possess exceptional value as commemorating or illustrating the history of the United States.” Section 110(f) of the NHPA requires that Federal agencies exercise a higher standard of care when considering undertakings that may directly and adversely affect NHLs. The law requires that agencies, “to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark.” In those cases when an agency’s undertaking directly and adversely affects an NHL, or when Federal permits, licenses, grants, and other programs and projects under its jurisdiction or carried out by a state or local government pursuant to a Federal delegation or approval so affect an NHL, the agency should consider all prudent and feasible alternatives to avoid an adverse effect on the NHL (NPS 2021).

NHPA Section 110(f) applies specifically to NHLs. The implementing regulations for Section 106 of the NHPA detail special requirements for protecting NHLs, as required by NHPA Section 110(f). These special requirements, found at 36 CFR 800.10, provide the following guidance to federal agencies in order to comply with Section 110(f) through the Section 106 process:

- Requires the agency official, to the maximum extent possible, to undertake such planning and actions as may be necessary to minimize harm to any NHL that may be directly and adversely affected by an undertaking
- Requires the agency official to request the participation of the ACHP in any consultation conducted under 36 CFR 800.6 to resolve adverse effects to NHLs
- Further directs the agency to notify the Secretary of any consultation involving an NHL and to invite the Secretary to participate in consultation where there may be an adverse effect

The HRVEA identified seven NHLs in the viewshed APE for the Project: Block Island South East Lighthouse, The Breakers, Marble House, Bellevue Avenue Historic District, Ocean Drive Historic District, Battle of Rhode Island Historic District, and Montauk Point Lighthouse (EDR 2021). BOEM has determined that only one NHL—Block Island South East Lighthouse—would be adversely affected by the Project.

BOEM is fulfilling its responsibilities to give a higher level of consideration to minimizing harm to NHLs, as required by NHPA Section 110(f), through implementation of the special requirements outlined at 36 CFR 800.10. BOEM invited the NPS (as delegated by the Secretary) and ACHP to be consulting parties with initiation of the NHPA Section 106 process on the Project. BOEM has determined the Project would result in an adverse effect to Block Island South East Lighthouse NHL. BOEM notified the NPS and ACHP of this determination with distribution of the draft Finding.

Block Island South East Lighthouse NHL, a five-story brick tower and a two-and-a-half-story brick duplex keeper's residence built by the U.S. Light House Board in 1874 on Mohegan Bluff, is a rare surviving example of a lighthouse of Victorian Gothic design influence and the sole surviving lighthouse of its high-style design (EDR 2021; Reynolds 1995). This NHL is listed on the NRHP under Criterion A, for its national importance in the history of maritime transportation, and under Criterion C for the national significance of its architecture and technology. The maritime setting of the NHL is a key aspect of historic integrity cited in the NHL nomination form for the property (Reynolds 1995). The HRVEA found Block Island South East Lighthouse NHL in particular to have high visual sensitivity within the viewshed APE, due to its historic location, setting, and feeling being "primarily associated with clear views of the sea and for which public use enhances appreciation of the property's historic use and association with the sea" (EDR 2021:62). BOEM has determined that the integrity of the Block Island South East Lighthouse NHL, with its vantage point from an elevated seaside bluff offering open seaward views, would be diminished by the placement of SFWF WTGs in the setting of the NHL, thereby resulting in adverse effects to the Block Island South East Lighthouse NHL from the Project.

BOEM has planned and is taking action to avoid adverse effects on NHLs in accordance with NHPA 110(f) and pursuant to *The Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act* (NPS 2021). Under all Project alternatives (see Table 1), BOEM would avoid adverse effects to six NHLs in the viewshed APE—The Breakers, Marble House, Bellevue Avenue Historic District, Ocean Drive Historic District, Battle of Rhode Island Historic District, and Montauk Point Lighthouse—through the established distance of the SFWF Lease Area, at 25 mile or more, from these NHLs. At these distances, obscuring factors such as curvature of the Earth and atmospheric and environmental factors like fog, haze, sea spray, and wave height, would avoid adverse effects to those NHLs from SFWF WTGs.

Given the relatively small size of the lease and number of turbines proposed, constraints on the necessary generation capacity for the project to be feasible, and the distance of the lease area to the Block Island South East Lighthouse NHL, BOEM determined that all feasible alternatives, including all feasible turbine layouts, would result in adverse visual effects on this NHL (see BOEM 2021a and EDR 2021). Because of all these factors, the only alternative that BOEM was able to identify that avoids any effects on the Block Island South East Lighthouse NHL was the no-action alternative. In the final EIS, BOEM has identified a preferred alternative that reduces the number of turbines by three from what was proposed in the COP (the Fisheries Habitat Impact Minimization alternative; see the South Fork FEIS, published August 16, 2021). While the differences between alternatives may be small, the preferred alternative would reduce visual effects on the Block Island South East Lighthouse NHL due to the fact that less turbines would be constructed and therefore visible from this property.

When prudent and feasible alternatives "appear to require undue cost or to compromise the undertaking's goals and objectives, the agency must balance those goals and objectives with the intent of section 110(f)" (NPS 1998). In this balancing, the NPS suggests that agencies should consider "(1) the magnitude of the undertaking's harm to the historical, archaeological and cultural qualities of the NHL; (2) the public interest in the NHL and in the undertaking as proposed, and (3) the effect a mitigation action would have on meeting the goals and objectives of the undertaking" (NPS 1998). Here, the magnitude of the visual effects on the NHL is minor given the small number of turbines, their distance from the NHL, and the presence of existing WTGs visible from the NHL. Moreover, while the undertaking would affect the

historic setting of the NHL, it would not affect any other character-defining features or aspects of the NHL's historic integrity. The Block Island South East Lighthouse NHL, should the undertaking proceed, would still illustrate its regional and national maritime significance, and continue to exemplify its importance as a rare surviving example of its rare architectural design.

In considering the other factors suggested by NPS, BOEM recognizes there is generally substantial and highly supportive public interest in using the OCS to develop clean energy sources. For instance, Executive Order 14008 declares the policy of the United States "to organize and deploy the full capacity of its agencies to combat the climate crisis to implement a Government-wide approach that reduces climate pollution in every sector of the economy...and spurs well-paying union jobs and economic growth, especially through innovation, commercialization, and deployment of clean energy technologies and infrastructure" (EO 14008, 2021). This undertaking contributes to these goals.

Taking into account all these considerations, BOEM remains in consultation with the SHPOs, ACHP, NPS, and other consulting parties to identify further efforts to minimize the magnitude, extent, and nature of adverse effects from the Project to the NHL. Minimization measures planned to date would reduce harm from visual effects to not only the Block Island South East Lighthouse NHL but also the other aboveground historic properties adversely affected by the Project. Measures to minimize harm to the Block Island South East Lighthouse NHL could consist of, but would not be limited to, the following:

- Planned distance of the SFWF Lease Area from adversely affected aboveground properties, minimizing the relative scale and prominence of visible WTGs.
- Uniform WTG design, speed, height, and rotor diameter to reduce visual contrast.
- Uniform spacing of 1 nm (1.15 mile) to decrease visual clutter, consistent with spacing across the RI-MA WEAs, aligning WTGs to allow for safe transit corridors.
- The option to reduce the number of constructed WTGs from a maximum proposed number of 15 (the Fisheries Habitat Impact Minimization alternative; see the South Fork FEIS, published August 16, 2021).
- Lighting and marking in compliance with BOEM's *Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development* (BOEM 2021b).
 - Paint color RAL 9010 Pure White or RAL 7035 Light Grey to blend with background sea and skies.
 - Flashing lighting instead of steady lighting where practicable.
 - Use of ADLSs (subject to approval by the Federal Aviation Administration) to drastically limit the time in which WTG lights are on and visible from adversely affected properties (ADLS lighting would reduce the nighttime lighting to less than 1% of the time that standard aircraft warning lights would be lit, on average, during Project operation [BOEM 2021a]).

Through consultation, BOEM would continue to consider additional minimization measures, to the maximum extent feasible. BOEM would further require mitigation of adverse effects to the Block Island South East Lighthouse NHL that remain after the application of minimization efforts. BOEM would identify and finalize mitigation measures specific to the Block Island South East Lighthouse NHL with the consulting parties through development of the MOA. Mitigation measures for adverse effects to NHL must be reasonable in cost and not be determined using inflexible criteria, as described by the NPS

(2021). Mitigation of adverse effects to the Block Island South East Lighthouse NHL would need to meet the following requirements:

- reflect the heightened, national importance of the property and be appropriate in magnitude, extent, nature, and location of the adverse effect;
- focus on replacing lost historic resource values with outcomes that are in the public interest, such as through development of products that convey the important history of the property;
- comply with *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings* (NPS 2017).

The measures for the avoidance, minimization, and mitigation of adverse effects on the Block Island South East Lighthouse NHL, for compliance with NHPA Section 110, and as required by 36 CFR 800.6, would be included in the MOA and implemented by the signatories to the MOA. These measures would be made conditions of approval of the ROD under NEPA. With transmittal of this Finding of Adverse Effect document, BOEM is specifically requesting consultation with the NPS (to which the Secretary has delegated consultation authority on NHLs), RISHPO, and interested consulting parties pursuant to 36 CFR 800.10(c). BOEM will continue to involve NPS, RISHPO, ACHP, and all interested consulting parties, including the public, in consultation on special requirements for minimizing harm to and protecting Block Island South East Lighthouse NHL specifically.

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Appendix A: Area of Potential Effects Map Figures

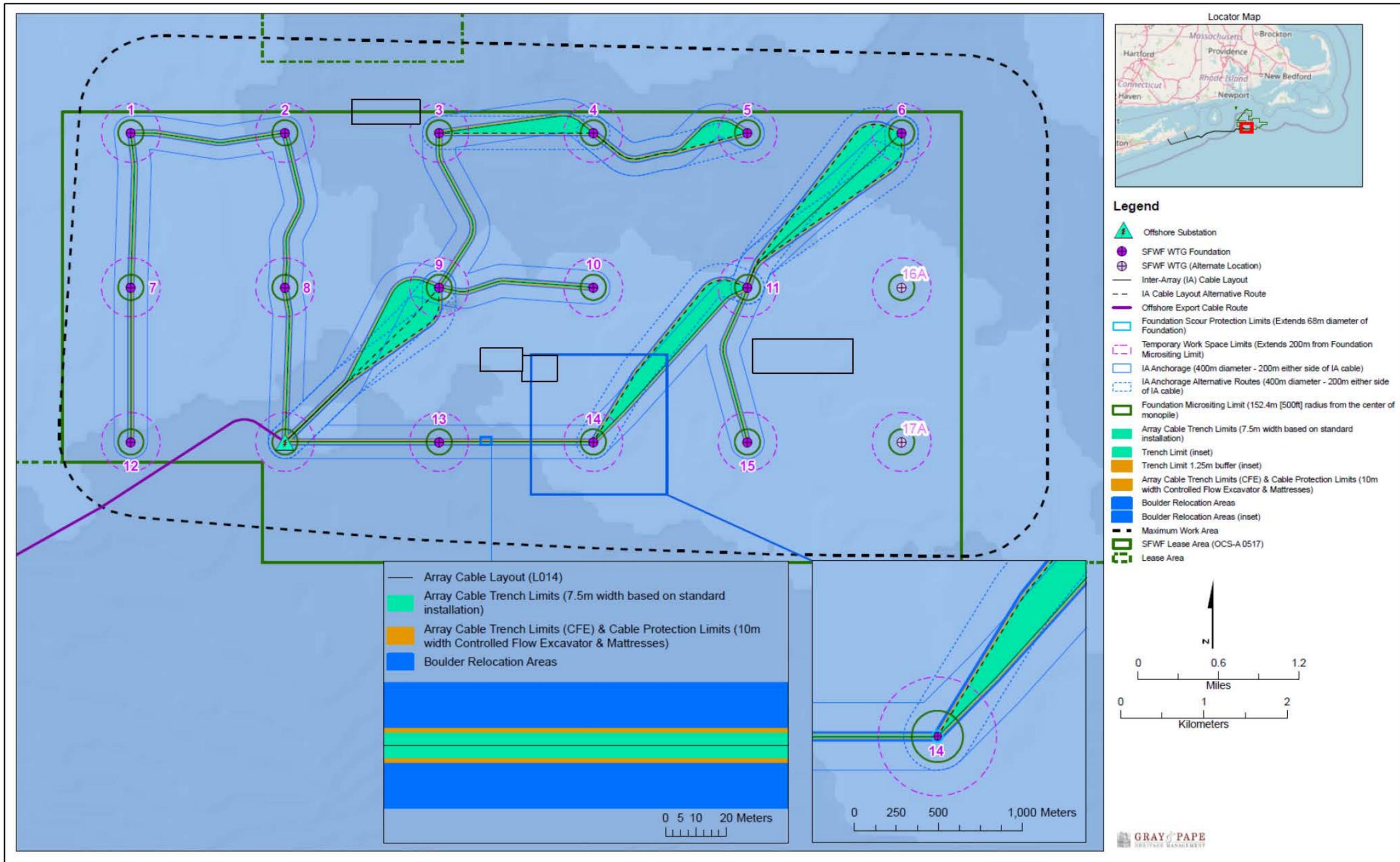


Figure A-1. Marine APE at the SFWF.

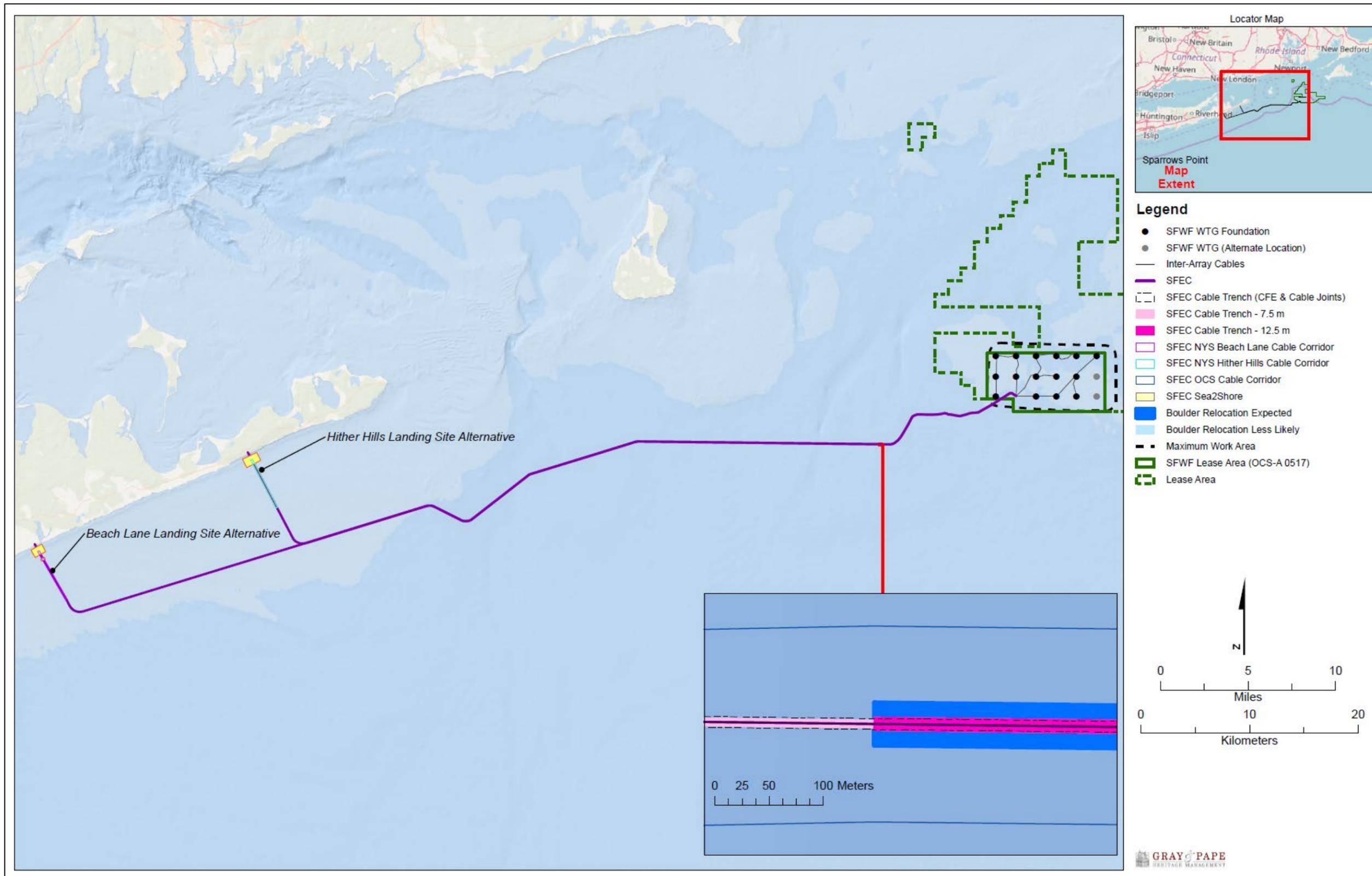


Figure A-2. Marine APE at the SFEC.

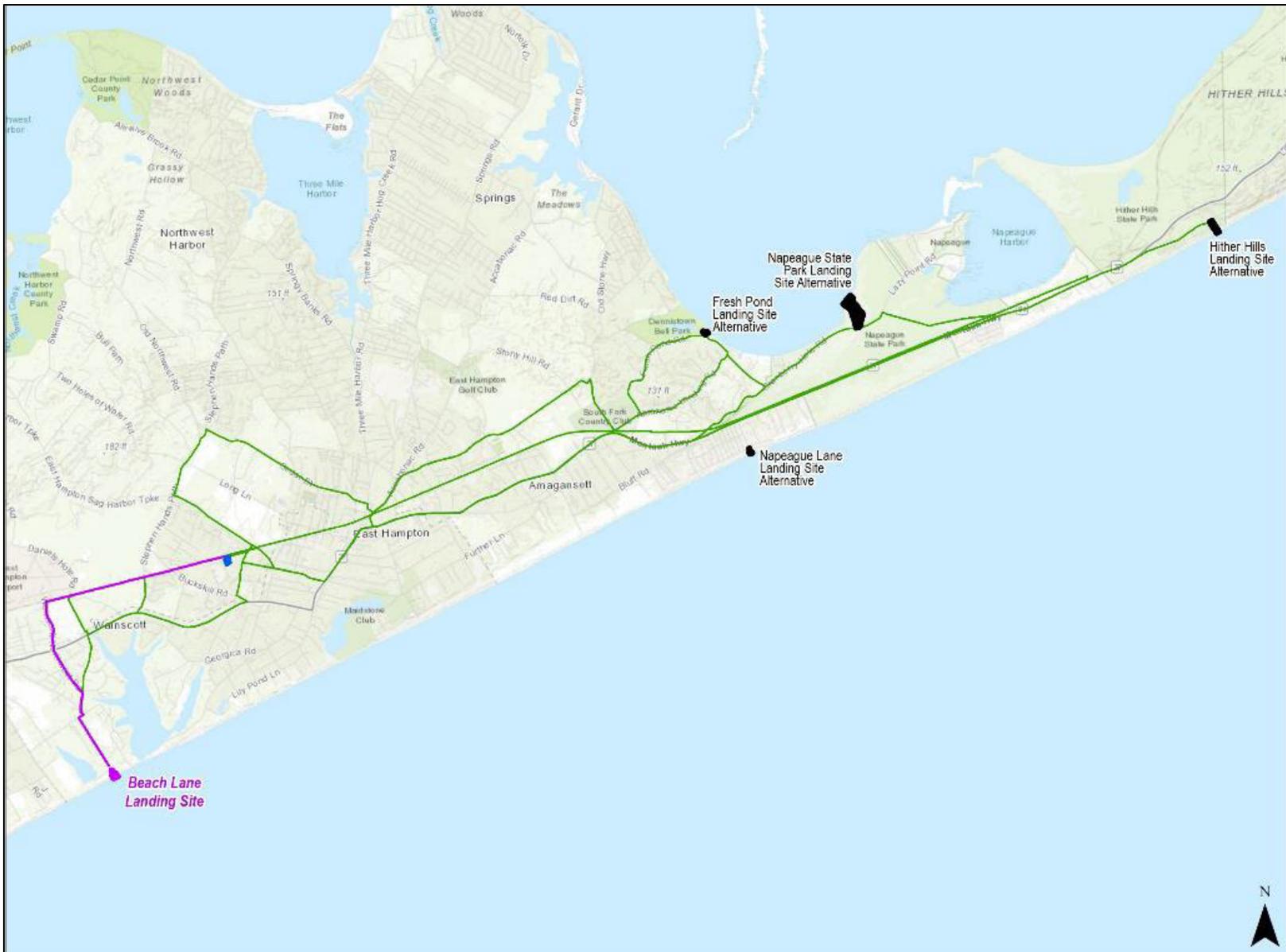
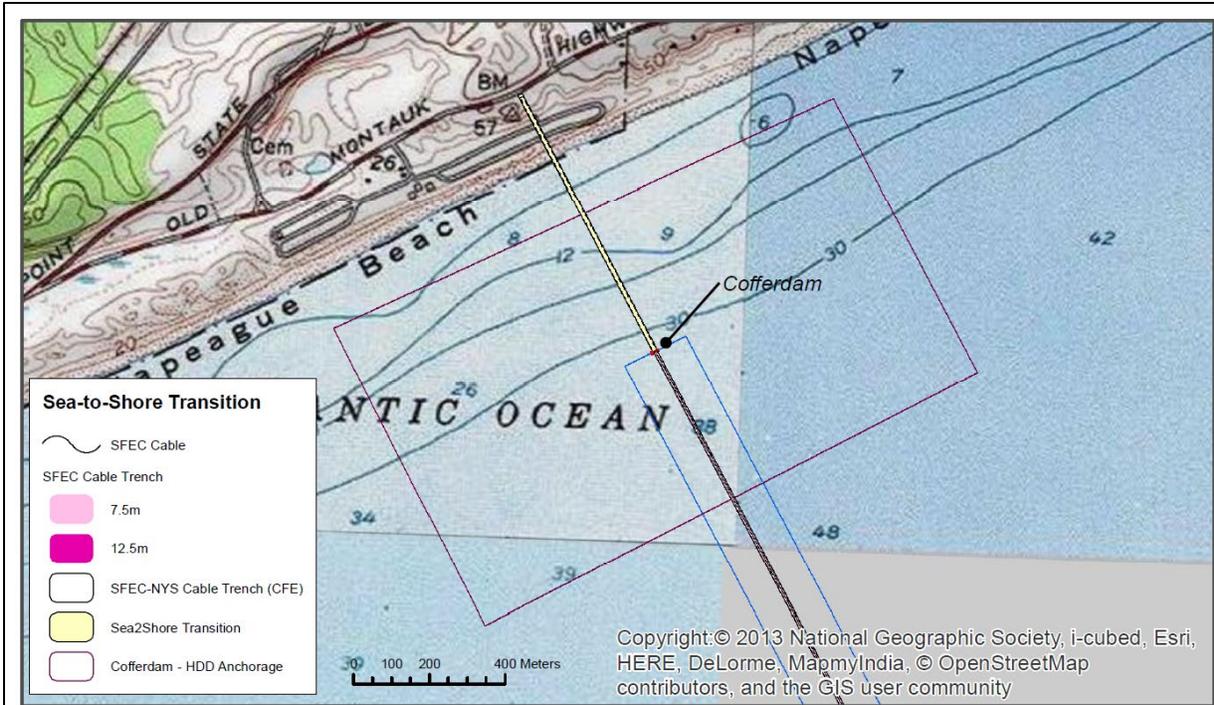
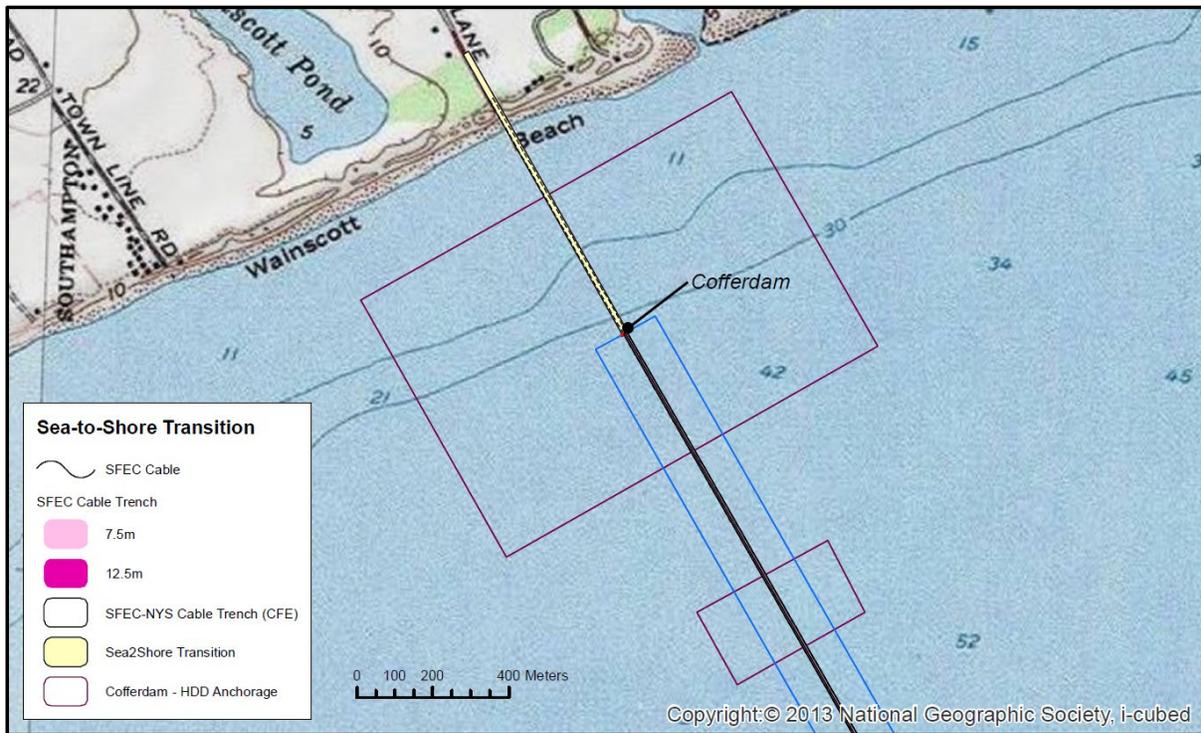


Figure A-3. Terrestrial APE with onshore cable and landing site alternatives considered in the COP.



Hither Hills Landing Site Alternative



Beach Lane Landing Site Alternative

Figure A-4. Terrestrial APE at the landing site alternatives.

**Appendix B: Map Figures of Historic Properties in Relation to the APE
(Detached – Confidential)**



