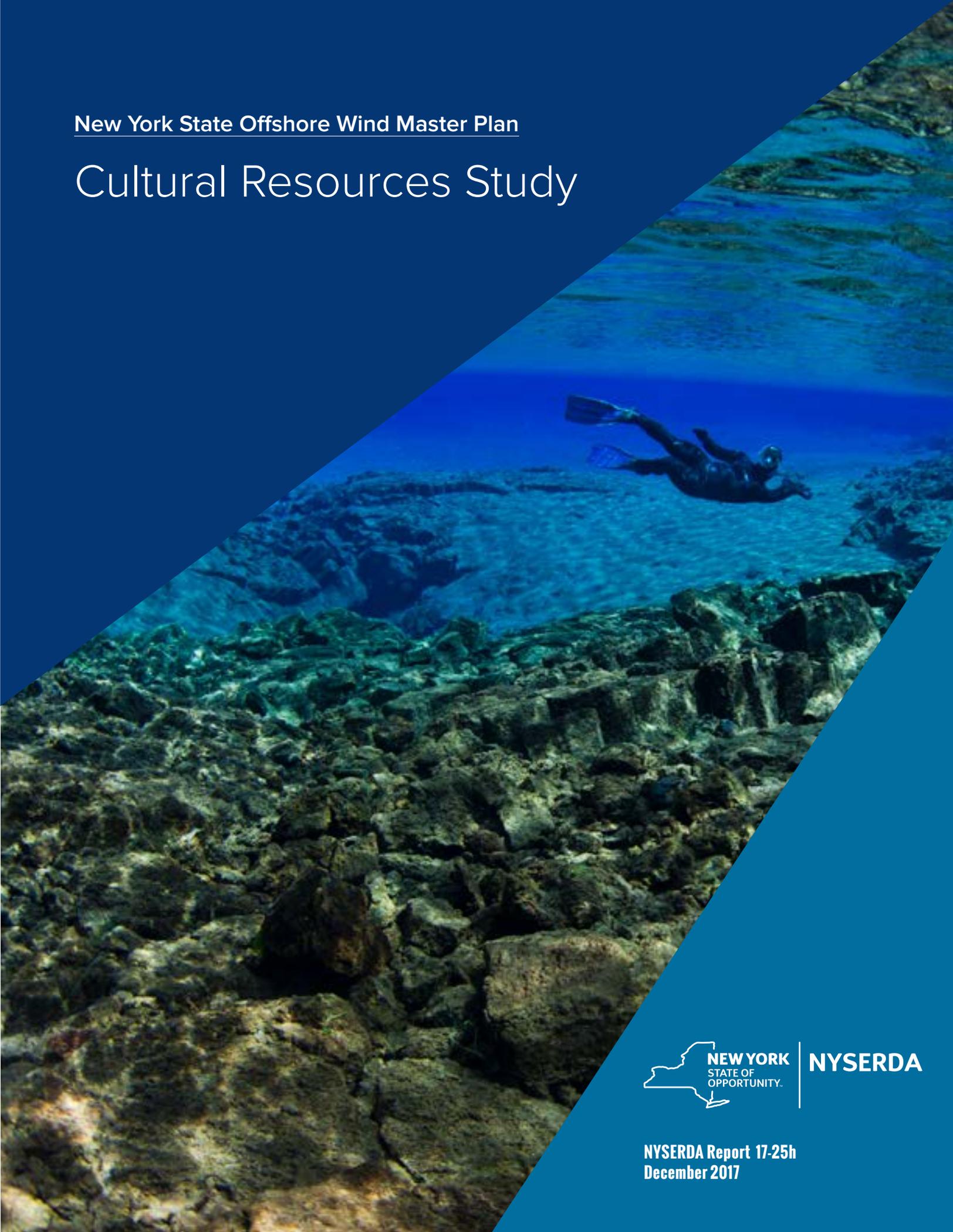


New York State Offshore Wind Master Plan

Cultural Resources Study



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New York State Offshore Wind Master Plan

Cultural Resources Study

Final Report

Prepared for:

New York State Energy Research and Development Authority

Prepared by:

Ecology and Environment Engineering, P.C.

New York, New York

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Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
AoA	Area of Analysis
APE	Area of Potential Effects
AWOIS	Automated Wreck and Obstruction Information System
BMP	Best Management Practice
BOEM	Bureau of Ocean Energy Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COP	Construction and Operations Plan
CRIS	Cultural Resources Information System
DOS	New York State Department of State
ENC	Electronic Navigational Chart
HRG	high-resolution geophysical
Master Plan	New York State Offshore Wind Master Plan
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act of 1966
NOAA	National Oceanic and Atmospheric Administration
NORAD	North American Aerospace Defense Command
NPS	National Park Service
NRHP	National Register of Historic Places
NYCRR	New York Codes, Rules and Regulations
NYSERDA	New York State Energy Research and Development Authority
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
NYAC	New York Archaeological Council
NYSHPA	New York State Historic Preservation Act
NYSM	New York State Museum
OPRHP	New York State Office of Parks, Recreation, and Historic Preservation
OSA	Offshore Study Area
PA	Programmatic Agreement
ROW	Right-of-Way
RUE	Right-of-Use
SAP	Site Assessment Plan

SHPO	State Historic Preservation Office/Officer
SRHP	New York State Register of Historic Places
Study	Cultural Resources Study
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Officer
USACE	U.S. Army Corps of Engineers

Executive Summary

The primary purpose of this Cultural Resources Study (Study) is to establish the framework within which the future development of offshore wind energy projects will be conducted in order to protect cultural resources and historic properties in accordance with federal and state laws, regulations and guidance. In the context of developing wind energy projects off the coast of New York, effective protection of cultural resources hinges upon the following:

- A comprehensive management strategy based on adherence to applicable federal and state regulations and guidance.
- The results of preliminary background research to identify known cultural resources within a specified Area of Analysis (AoA).
- A preliminary assessment of the sensitivity of a specified AoA for containing cultural resources, both known and previously unidentified.
- A preliminary assessment of risks associated with anticipated future offshore wind development within a specified AoA.
- Specific processes and guidelines for identifying cultural resources and implementing measures to avoid, minimize, or mitigate potential risks.

This Study considers cultural resources within the federal regulatory framework that will guide future offshore wind energy development activity in New York State. Adherence to federal regulatory guidelines and procedures will be overseen by the Bureau of Ocean Energy Management (BOEM), which is the federal agency with regulatory jurisdiction over the outer continental shelf, on which wind energy development offshore of New York State would occur. With regard to the protection of cultural resources, BOEM will be the lead federal agency and will be responsible for demonstrating that the effects of future wind energy development projects located offshore of New York State on cultural resources are considered in accordance with Section 106 of the National Historic Preservation Act. BOEM's process for this regulatory compliance has been previously determined per the terms of the Programmatic Agreement executed for the review of outer continental shelf renewable energy activities offshore of New Jersey and New York (see Appendix A).

This Study considers the information regarding archaeological and architectural resources within the offshore portion of the AoA and within a one-mile-wide onshore portion of the AoA located primarily along the southern shoreline of Long Island. The information regarding cultural resources considered as part of this Study is primarily derived from previously conducted archaeological investigations in the offshore AoA and from previously recorded submerged archaeological or built resources within the

offshore portion of the AoA. Considering the offshore AoA is 15 miles offshore, future wind energy development projects located offshore of New York State may not be perceptible from the shore. However, to be consistent with BOEM's Programmatic Agreement, which addresses the potential for such projects to be visible from the shoreline of New York, the information regarding cultural resources includes previously recorded aboveground architectural or other built resources located within a one-mile-wide onshore portion of the AoA along the southern shoreline of Long Island.

This Study also presents a cultural context for offshore archaeological and built resources and for aboveground architectural or other built resources within the AoA to provide insight into the types of yet unidentified cultural resources that could be identified as the result of future cultural resources investigations for specific future wind energy development projects offshore of New York State. This information, in conjunction with previously recorded cultural resources within the AoA, is used to formulate sensitivity and risk assessments for the AoA.

This Study also provides a summary of federal and State guidance that future developers would follow when conducting offshore (underwater) and onshore (terrestrial) cultural resources investigations to fully identify cultural resources as part of acquiring the necessary federal and/or State permits and/or approvals within the AoA for their specific offshore wind energy development projects. Such guidance indicates the type of information and the scope and level of effort that would be incorporated into or required for the offshore and onshore cultural resource investigations needed to identify cultural resources.

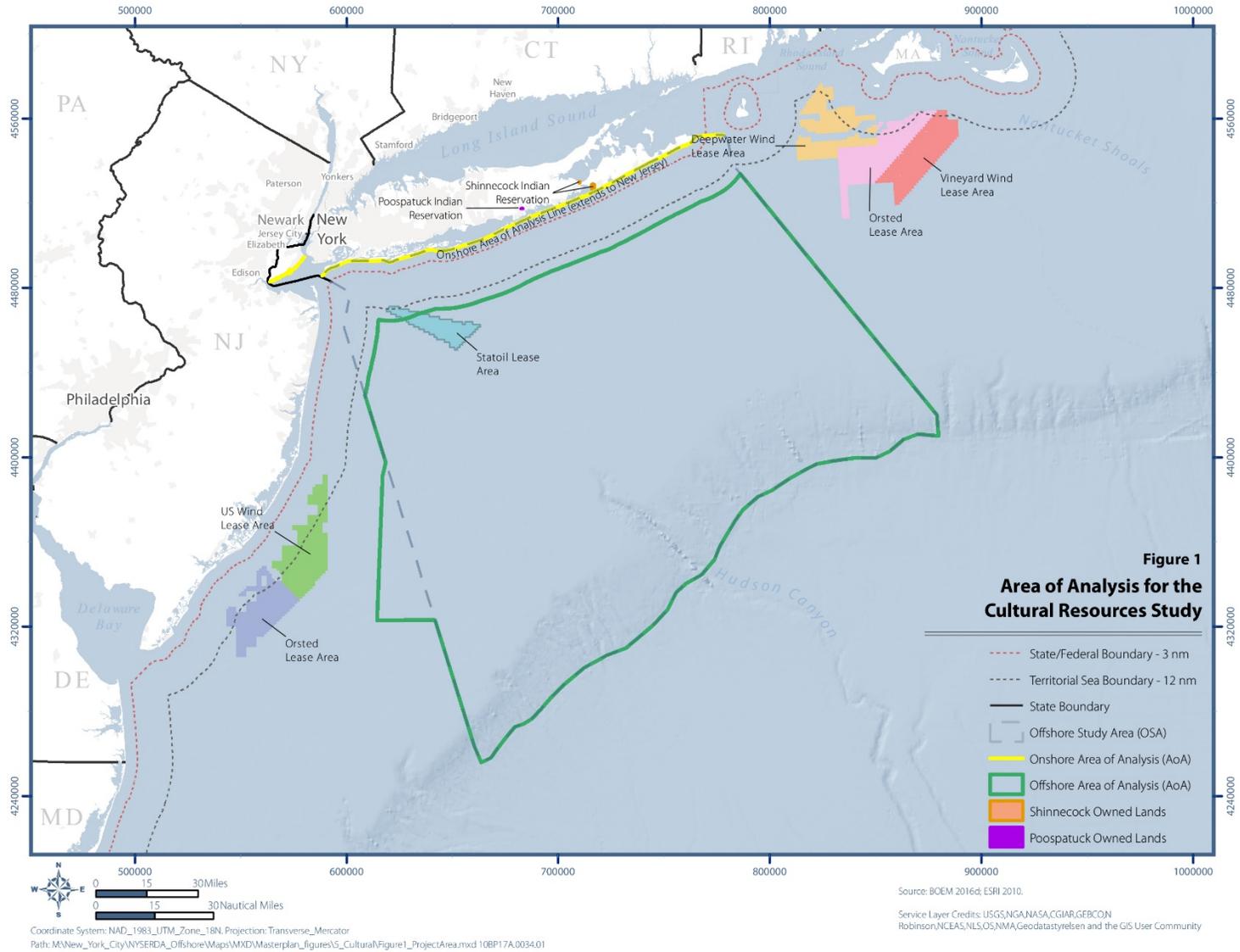
1 Introduction

This Cultural Resources Study (Study) is one of a collection of studies prepared on behalf of New York State in support of the New York State Offshore Wind Master Plan (Master Plan). These studies provide information on a variety of potential environmental, social, economic, regulatory, and infrastructure-related issues associated with the planning for future offshore wind energy development off the coast of the State. When the State embarked on these studies, it began by looking at a study area identified by the New York State Department of State (DOS) in its two-year Offshore Atlantic Ocean Study (DOS 2013). This study area, referred to as the “offshore study area (OSA),” is a 16,740-square-mile (43,356-square-kilometer) area of the Atlantic Ocean extending from New York City and the south shore of Long Island to beyond the continental shelf break and slope into oceanic waters to an approximate maximum depth of 2,500 meters (Figure 1). The OSA was a starting point for examining where turbines may best be located, and the area potentially impacted. Each of the State’s individual studies ultimately focused on a geographic Area of Analysis (AoA) that was unique to that respective study. The AoA for this study is described below in Section 1.1.

The State envisions that its collection of studies will form a knowledge base for the area off the coast of New York that will serve a number of purposes, including (1) informing the preliminary identification of an area for the potential locating of offshore wind energy areas that was submitted to the Bureau of Ocean Energy Management (BOEM) on October 2, 2017 for consideration and further analysis; (2) providing current information about potential environmental and social sensitivities, economic and practical considerations, and regulatory requirements associated with any future offshore wind energy development; (3) identifying measures that could be considered or implemented with offshore wind projects to avoid or mitigate potential risks involving other uses and/or resources; and (4) informing the preparation of a Master Plan to articulate New York State’s vision of future offshore wind development. The Master Plan identifies the potential future wind energy areas that have been submitted for BOEM’s consideration, discusses the State’s goal of encouraging the development of 2,400 megawatts (MW) of wind energy off the New York coast by 2030, and sets forth suggested guidelines and best management practices (BMPs) that the State will encourage to be incorporated into future offshore wind energy development.

Figure 1. Area of Analysis for the Cultural Resources Study.

Source: BOEM 2016d; ESRI 2010



Each study was prepared in support of the larger effort and was shared for comment with federal and State agencies, indigenous nations, and relevant stakeholders, including non-governmental organizations and commercial entities, as appropriate. The State addressed comments and incorporated feedback received into the studies. Feedback from these entities helped to strengthen the quality of the studies and also helped to ensure that these work products will be of assistance to developers of proposed offshore wind projects in the future. A summary of the comments and issues identified by these external parties is included in the Outreach Engagement Summary, which is appended to the Master Plan.

The Energy Policy Act of 2005 amended Section 8 of the Outer Continental Shelf Lands Act (OCSLA) to give BOEM the authority to identify offshore wind development sites within the Outer Continental Shelf (OCS) and to issue leases on the OCS for activities that are not otherwise authorized by the OCSLA, including wind farms. The State recognizes that all development in the OCS is subject to review processes and decision-making by BOEM and other federal and State agencies. Neither this collection of studies nor the State's Master Plan commit the State or any other agency or entity to any specific course of action with respect to offshore wind energy development. Rather, the State's intent is to facilitate the principled planning of future development off the New York coast, provide a resource for the various stakeholders, and encourage the achievement of the State's offshore wind energy goals.

1.1 Scope of Study

This Study considers the potential effects of future offshore wind energy development projects in the AoA on cultural resources. The AoA for this Study includes an offshore portion and an onshore portion. The offshore portion of the AoA for this Study is a roughly rectangular area located on the OCS of the Atlantic Ocean (see Figure 1). The offshore AoA's northern boundary is located 15 nautical miles from the southern shoreline of Long Island, New York, and the eastern shoreline of New Jersey, and the offshore AoA extends southeast into the Atlantic Ocean for a distance between approximately 90 to 120 nautical miles. The onshore AoA for this Study consists of a one-mile-wide onshore area along the southern shoreline of Long Island. This one-mile-wide onshore area includes parts of Richmond, Kings, Queens, Nassau, and Suffolk counties and has been included in the AoA to address the potential visibility of offshore wind energy development projects from previously recorded aboveground cultural resources and historic properties.

To consider the potential effects of offshore wind development projects on cultural resources and historic properties, this Study identifies previously recorded cultural resources and historic properties that are located within the offshore and onshore portions of the AoA and considers the potential for additional previously unidentified and unrecorded cultural resources and historic properties to be present.

Cultural resources generally consist of offshore and onshore archaeological resources (prehistoric and historic archaeological sites) and architectural or other built resources (buildings, structures, etc.). Cultural resources may also include shipwrecks, downed planes, and other offshore objects or structures (piers, docks, weirs, etc.) in underwater contexts; indigenous, cultural, and historic landscapes and seascapes; and traditional cultural properties, including those associated with indigenous nations with an interest in lands or waters included in the AoA. These various types of cultural resources are associated with the prehistory and history of offshore and onshore portions of the AoA and typically have been documented through various previously conducted cultural resources investigations or other studies conducted within the AoA.

Historic properties are a subset of cultural resources and are defined as “any prehistoric or historic district, site, buildings, structure or object included in, or determined eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria” (ACHP 2004). NRHP-eligibility criteria set forth in 36 Code of Federal Regulations (CFR) 60 were established by the Secretary of the Interior for use in evaluating the eligibility of properties for the National Register and provide guidelines for evaluating the significance of a cultural resource (ACHP 2004). Historic properties will also include properties that have been designated National Historic Landmarks (NHLs) because of their exceptional value to the nation as a whole.

For the purposes of this Study, only aboveground cultural resources and historic properties in New York State, primarily comprised of architectural or other built resources, were considered in the onshore portion of the AoA. The views and viewsheds that comprise the setting of these types of cultural resources and historic properties are often considered character-defining features that contribute to their significance. New landscape features that would result from future wind energy development projects located offshore of New York State could result in changes to their setting that would affect their significance.

Onshore (terrestrial) archaeological resources were not considered for this Study because the significance of archaeological resources is generally based on whether a site has yielded, or may be likely to yield, important prehistoric or historic information. This is typically related to the integrity of, or lack of disturbance to, its archaeological materials and features. Generally, the setting of archaeological resources is not a character-defining feature that contributes to the significance of archaeological resources. Therefore, while new landscape features resulting from future wind energy development projects offshore of New York may affect the setting of onshore (terrestrial) archaeological resources, such a change would not be expected to affect the significance of these archaeological resources.

Potential effects typically will consist of physical effects on underwater archaeological or built resources that are located in the offshore portion of the AoA. Potential effects may also consist of visual effects on onshore architectural or built resources, including resources that are historic properties. Offshore wind energy development projects may also affect other types of cultural resources, such as historical or cultural landscapes or seascapes or traditional cultural properties, including resources that are historic properties, if any such resources are present within the AoA.

For the purposes of this Study, potential visual effects are only considered for previously recorded cultural resources and historic properties that are located within the onshore portion of the AoA (i.e., the southern shoreline of Long Island). Additional cultural resources and historic properties are located in similar onshore locations along the coastline of New Jersey and also may be within the viewshed of future offshore wind development, depending on the location of lease areas. While the previously recorded cultural resources and historic properties along the coastline of New Jersey have not been included in the scope of this Study, they would be considered as part of BOEM's Section 106 review of leases and proposed offshore wind development projects in the AoA, as discussed in Section 1.4.

Section 1 provides a description of the Study objectives, as well as a summary of the regulatory framework within which an evaluation of the potential effects of wind energy development projects on cultural resources would be conducted. Section 2 describes the methodology used to identify previously recorded cultural resources and historic properties within the offshore and onshore portions of the AoA. Section 3 uses the information obtained for previously identified cultural resources and historic properties to assess the sensitivity of the offshore and onshore portions of the AoA to contain additional, previously unidentified cultural resources and historic properties and to assess the risk that future offshore wind energy development projects may affect known and previously unidentified cultural resources and historic properties. Section 4 presents the federal and State regulatory processes and guidance that

would be implemented to reduce the risks of affecting offshore and onshore cultural resources, along with BMPs that should be implemented by offshore wind energy project developers as part of preconstruction, construction, and operational activities. Section 5 lists references to the materials used to prepare this study. The executed Programmatic Agreement between BOEM, the New Jersey and New York State Historic Preservation Offices (SHPOs), and the Advisory Council on Historic Preservation (ACHP) for the Section 106 review of offshore wind energy development projects in the AoA is appended to this Study (see Appendix A).

1.2 Study Objectives

The principal objectives of this Study are as follows:

- Summarize information regarding previously recorded cultural resources and historic properties within the offshore and onshore portions of the AoA.
- Determine the overall sensitivity of the offshore portion of the AoA for containing additional submerged cultural resources and historic properties that have not been previously recorded.
- Assess and summarize the risks to cultural resources and historic properties that are associated with offshore wind energy development in the AoA.
- Identify guidelines and BMPs that could be implemented by offshore wind energy developers to avoid, minimize, or mitigate potential impacts on cultural resources and adverse effects on historic properties.

1.3 Regulatory Framework

Future wind energy development projects located offshore of New York State that require a grant, license, permit, or lease from a federal agency will be subject to compliance with federal regulations for the protection of cultural resources and historic properties. Federal regulations for the protection of cultural resources and historic properties that are applicable to future wind energy development projects located offshore of New York State consist of Section 106 of the National Historic Preservation Act of 1966 (NHPA) and its implementing regulations at 36 CFR Part 800, and the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500-1508), as summarized below in Section 1.3.1.

BOEM has regulatory jurisdiction over the OCS, on which future wind energy development projects located offshore of New York State would be constructed and operated. Therefore, BOEM intends to review such projects as part of its granting, licensing, permitting, or leasing authority in accordance with federal regulations for the protection of cultural resources and historic properties. BOEM's review will include offshore portions of such projects located on the OCS, nearshore portions of such projects

located on submerged lands under state waters, and onshore portions of such projects (see Section 1.3.1.2). Additionally, the actions of other federal agencies regarding future wind energy development projects located offshore of New York State (e.g., issuance of a U.S. Army Corps of Engineers [USACE] permit) may also require consideration of such projects in accordance with Section 106 of the NHPA.

Portions of future wind energy development projects located offshore of New York State will also be located on submerged lands in state waters and in onshore (terrestrial) areas of the state, where the offshore portions of the projects will require interconnection to new and existing energy facilities. New York State has developed state laws for the protection of cultural resources and properties listed in the NRHP, or listed in or determined eligible for listing in the State Register of Historic Places. These state laws consist of Section 233 of the New York State Education Law, as amended, and Section 14.09 of the New York State Historic Preservation Law of 1980, and its implementing regulations at 9 New York Codes, Rules and Regulations (NYCRR) Parts 426-428. The applicability of these state laws to future wind energy development projects located offshore of New York State is summarized in Section 1.3.2.

1.3.1 Federal Regulatory Framework

Federal regulations for the protection of cultural resources and historic properties that are applicable to future wind energy development projects located offshore of New York State consist of Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800, and NEPA and the CEQ's regulations for implementing NEPA (40 CFR 1500-1508), as summarized below.

1.3.1.1 Section 106 of the National Historic Preservation Act

Section 106 of the NHPA, as amended, and its implementing regulations at 36 CFR Part 800, require that federal agencies such as BOEM take into account the effects of their actions (referred to as “undertakings” under Section 106) on properties that may be eligible for or listed in the NRHP and afford the ACHP a reasonable opportunity to comment. Section 106 of the NHPA is the primary federal regulation for the protection of cultural resources and historic properties that is applicable to federal actions on the OCS.

As indicated above, in Section 1.3, because BOEM has regulatory jurisdiction over the OCS, on which future wind energy development projects located offshore of New York State would be constructed and operated, it intends to review such projects as part of its granting, licensing, permitting, or leasing authority in accordance with Section 106 of the NHPA (BOEM 2017a). BOEM's Section 106 review

will include offshore portions of such projects located on the OCS, nearshore portions of such projects located on submerged lands under state waters, and onshore portions of such projects. Additionally, the actions of other federal agencies regarding future wind energy development projects located offshore of New York State (e.g., issuance of a USACE permit) may also require those federal agencies to consider the effects of their respective actions associated with such projects in accordance with Section 106 of the NHPA.

To determine whether an undertaking could affect NRHP-eligible properties, cultural resources that could be affected by the undertaking must be inventoried and evaluated for inclusion in the NRHP. The NRHP is a register of districts, sites, buildings, structures, and objects of significance in American history, architecture, archaeology, engineering, and culture. The NRHP is maintained by the Secretary of the Interior. A property may be listed in the NRHP if it meets criteria for evaluation defined in 36 CFR § 60.4. Cultural resources are considered to be NRHP eligible, and thus historic properties, if they display the quality of significance in one or more of the following areas: American history, architecture, archaeology, engineering, and culture. They also have to possess integrity of location, design, setting, workmanship, feeling, and association, and generally have to meet one of the following four National Register criteria:

- Criterion A – properties that are associated with the events that have made a significant contribution to the broad patterns of American history.
- Criterion B – properties that are associated with the lives of persons significant in our past.
- Criterion C – properties that embody the distinctive characteristic of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant or distinguishable entity whose components may lack individual distinction.
- Criterion D – properties that have yielded or may likely yield information important in prehistory or history (Andrus 2002).

Under Section 106 of the NHPA, only cultural resources that are historic properties (i.e., cultural resources that are listed in, or have been determined to be eligible for listing in, the NRHP) are considered when evaluating the effects of an undertaking.

There are three findings of effect on historic properties: no historic properties affected (also known as no effect on historic properties), no adverse effect on historic properties, and adverse effect on historic properties (ACHP 2004). For a finding of no historic properties affected, BOEM would have to determine that either no historic properties are present or historic properties are present, but the undertaking will have no effect upon them. For a finding of no adverse effect on historic properties, BOEM would have

to determine that historic properties are present that may be affected by the undertaking, but that the effects of the undertaking do not adversely affect any of the characteristics of a historic property that contribute to its NRHP eligibility, or that the undertaking has been modified or conditions have been imposed to avoid adverse effects. For a finding of adverse effect, BOEM would have to determine that historic properties are present and the undertaking may alter, directly or indirectly, any of the characteristics of a historic property that contribute to its NRHP eligibility in a manner that would diminish the integrity of the property's location, setting, materials, workmanship, feeling, or association (ACHP 2004). Examples of adverse effects include, but are not limited to, the following:

- Physical destruction of or damage to all or part of the property.
- 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's Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines.
- Removal of the property from its historic location.
- Changing the character of the property's use or the physical features within the property's setting that contribute to its historic significance.
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.
- Neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.
- 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 (ACHP 2004).

The regulations implementing Section 106 require consultation by BOEM with SHPOs, Tribal Historic Preservation Officers (THPOs) or representatives of federally recognized Indian tribes, representatives of local governments, additional consulting parties with a demonstrated interest in the undertaking and its effects on historic properties, and the public throughout the Section 106 review process (36 CFR §800.2). The ACHP is also invited to participate. The purpose of this consultation is to facilitate BOEM's evaluation of the undertaking's effects on historic properties.

The four principal steps for the Section 106 compliance process are

1. Initiation of the Section 106 process (36 CFR §800.3).
2. Identification of historic properties, consisting of those resources within an area of potential effects (APE) that are eligible for inclusion in the NRHP (36 CFR §800.4).
3. Assessment of the effects of the undertaking on historic properties in the APE (36 CFR § 800.4(d)(1) and (2) and 36 CFR §800.5).

4. Resolution of adverse effects (36 CFR §800.6) (ACHP 2004).

Adverse effects on historic properties may be resolved through preparation of a memorandum of agreement or a programmatic agreement developed in consultation between the lead federal agency, the SHPO, federally recognized Native American tribes, and other consulting parties to the Section 106 process (ACHP 2004).

BOEM previously determined that the development of wind energy development projects offshore of New York State would be considered an undertaking pursuant to Section 106 of the NHPA and that such an undertaking requires Section 106 review to identify historic properties, determine the effects of the undertaking on historic properties, and resolve any adverse effects on historic properties (BOEM 2016a, 2016b). In accordance with the implementing regulations for Section 106 of the NHPA (specifically, 36 CFR §800.14(b)), BOEM, the New Jersey and New York SHPOs, the Shinnecock Indian Nation, and the ACHP developed a Programmatic Agreement (PA) for future wind energy development projects in areas offshore of New Jersey and New York (BOEM 2016a). The PA is discussed in greater detail below in Section 1.3.1.2.

1.3.1.2 BOEM's Section 106 Programmatic Agreement

In 2016, BOEM, the New Jersey and New York SHPOs, and the ACHP executed a Section 106 PA for wind energy development projects in areas offshore of New Jersey and New York, and are considered signatories to the PA. The Shinnecock Indian Nation participated in the development of the PA but did not sign the PA (BOEM 2016a). A copy of the executed PA is included in Appendix A.

In summary, the PA consists of a Preamble and seven stipulations. The Preamble to the PA is comprised of 23 “Whereas” clauses that provide the background for BOEM’s review of OCS renewable energy projects offshore of New Jersey and New York under Section 106 of the NHPA. The seven stipulations address the processes for reviewing projects, such as future wind energy development projects located offshore of New York State, for compliance with Section 106 of the NHPA. Stipulations I, II, and III indicate how BOEM will evaluate undertakings associated with future offshore wind energy development projects for New York State in accordance with Section 106 of the NHPA.

Stipulation I addresses the process for Section 106 compliance for commercial leases, limited leases, research leases, right-of-way (ROW) grants, or right-of-use (RUE) and easement grants on the OCS. Specifically, Stipulation I indicates:

- The definition of the APE for these types of undertakings.
- The federal guidance that will be followed for identifying historic properties within the APE.
- How BOEM will identify and consult with Section 106 consulting parties and the public on these undertakings, their APE, and the identification investigations.
- That BOEM will treat all potential historic properties identified within the APE for such undertakings as NRHP-eligible historic properties unless BOEM determines, and the appropriate SHPO (or THPO, if located on tribal lands) agrees, they not NRHP eligible.
- That, where practicable, BOEM will require lessees or grantees to avoid effects on historic properties through lease stipulations, such that BOEM would be able to make a finding of no historic properties affected for these types of undertakings, consistent with 36 CFR §800.4(d)(1).
- If BOEM determines that there will be an effect on historic properties, BOEM will follow the process set forth in 36 CFR §800.5 of the implementing regulations to determine whether the effect will be adverse, follow the process set forth in 36 CFR §800.6 of the implementing regulations to resolve adverse effects on historic properties, and follow the process set forth in 36 CFR §800.10 of the implementing regulations to resolve direct and adverse effects on National Historic Landmarks.

Similarly, Stipulation II addresses the process for Section 106 compliance for undertakings requiring BOEM review and approval of Plans. Specifically, Stipulation II indicates

- The definition of the APE for these types of undertakings.
- The federal guidance that will be followed for identifying historic properties within the portion of the APE on the OCS.
- The state guidance, or tribal guidance if on tribal lands, that will be followed for identifying historic properties on state submerged lands or in the onshore terrestrial portion of the APE, and the process BOEM will require of the developer to consult with the appropriate SHPO, or THPO if on tribal lands, prior to initiating identification efforts.
- The state guidance, or tribal guidance if on tribal lands, that will be followed for identifying historic properties within the viewshed portion of the APE, and the process BOEM will require of the developer to consult with the appropriate SHPO, or THPO if on tribal lands, prior to initiating identification efforts.
- How BOEM will identify and consult with Section 106 consulting parties and the public on these undertakings, their APE, and the identification investigations.
- That BOEM will treat all potential historic properties identified within the APE for such undertakings as NRHP-eligible historic properties unless BOEM determines, and the appropriate SHPO (or THPO, if located on tribal lands) agrees, they not NRHP eligible.

- That, where practicable, as a condition of Plan approval, BOEM will require lessees or grantees to relocate elements of the proposed project that may affect potential historic properties, such that BOEM would be able to make a finding of no historic properties affected for these types of undertakings, consistent with 36 CFR §800.4(d)(1).
- If effects on historic properties cannot be avoided, BOEM will evaluate the NRHP eligibility of the properties in accordance with 36 CFR §800.4(c), follow the process set forth in 36 CFR §800.5 of the implementing regulations to determine whether the effect will be adverse, follow the process set forth in 36 CFR §800.6 of the implementing regulations to resolve any adverse effects on historic properties, and follow the process set forth in 36 CFR §800.10 of the implementing regulations to resolve direct and adverse effects on National Historic Landmarks.
- If a SHPO (or THPO, if located on tribal lands) disagrees with BOEM's determination of NRHP eligibility, BOEM shall obtain a determination of eligibility from the Secretary of the Interior, acting through the Director of the National Park Service, pursuant to 36 CFR Part 63, consistent with 36 CFR §800.4(c)(s).

Stipulation III lists those categories of activities exempt from review, which include archaeological sampling, meteorological buoys, and meteorological towers, when certain conditions are met. Stipulations IV and V provide additional information specific to BOEM's continued Section 106 consultation with federally recognized Indian tribes and the public, respectively. Consultation conducted under the terms of these two stipulations would be implemented as part of the consultation on the various types of undertakings described in Stipulations I and II of the PA.

1.3.1.3 National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. 4321 et seq., formally established environmental protection as a federal policy and requires federal agencies to assess the environmental impacts of a proposed action, including impacts upon historic and cultural resources. The CEQ, within the Office of the President, administers compliance with NEPA regulations and encourages the integration of other planning and environmental reviews, such as reviews conducted pursuant to Section 106 of the NHPA, with the NEPA process.

Federal agencies comply with NEPA regulations by preparing documents that address the environmental consequences, if any, of a proposed action. An environmental assessment contains an analysis for determining whether the impacts of the action will be significant. If significant, an environmental impact statement is issued by the agency. If not significant, a finding of no significant impact is issued.

As the lead agency for offshore wind farms in federal waters, BOEM, in consultation with other agencies and stakeholders, will ultimately determine the parameters of the NEPA analysis for BOEM actions, which can also be used as the partial basis for other consultations, such as consultation conducted as part of compliance with Section 106 of the NHPA. With regard to cultural resources and historic properties, NEPA regulations require a federal agency to consider the impacts of a proposed action on historic and cultural resources, including those historical and cultural resources that are listed in, or determined eligible for listing in, the NRHP (40 CFR §1500.28). Additionally, NEPA regulations provide specific opportunities for public participation in the environmental impact review process, including scoping meetings to determine the scope of environmental analysis for a proposed action and public review and comment periods for NEPA environmental documentation prepared for a proposed action (40 CFR 1500-1508). Federal agencies often coordinate the Section 106 requirement for consultation with the public with these NEPA public participation opportunities.

A previous study conducted for NYSERDA's offshore wind energy development program indicated that proposed offshore wind energy development projects in federal waters (more than three miles off New York State's coast) will require BOEM review under NEPA (NYSERDA 2015). This finding is consistent with BOEM's review of a proposed action for at least one other New York State offshore wind energy development project, the issuance of a commercial lease for the New York Wind Energy Area, which is located within this Study's AoA. This action was reviewed by BOEM under NEPA and under Section 106 of the NHPA (BOEM 2016b).

1.3.2 State Regulatory Framework

New York State laws for the protection of cultural resources and properties that are listed in the NRHP, or that are listed in or determined eligible for listing in the State Register of Historic Places, consist of Section 233 of the New York State Education Law, as amended, and Section 14.09 of the New York State Historic Preservation Law of 1980. The applicability of these state laws and implementing regulations for the protection of cultural resources and properties to future wind energy development projects located offshore of New York State are discussed below.

1.3.2.1 Section 233 of the New York State Education Law

Section 233 of the New York State Education Law, as amended, was enacted in 1958 to provide for the protection of archaeological and paleontological resources located on state lands. Section 233 of the New York State Education Law generally describes protected cultural resources as “any object of archaeological or paleontological interest” (NYSM 2017a). Archaeological and paleontological resources located on state lands in New York State are considered publicly owned cultural resources that are protected for both scientific and for education and historic purposes (NYSM 2017b). State lands include submerged lands under state waters that are under the control of New York State and are considered state lands (NYSM 2017a).

Section 233 of the New York State Education Law provides for the protection of archaeological and paleontological resources located on state lands by requiring a State Lands Permit for any activity that will “appropriate, excavate, injure, or destroy any object of archeological or paleontological interest, situated on or under lands owned by the State of New York.” Under the regulations of the Commissioner of Education, reconnaissance survey projects may also require a permit, even though no excavation of any site is proposed (NYSM 2017c). The NYSM administers Section 233 of the New York State Education Law and issues State Lands Permits that are required pursuant to Section 233 of the New York State Education Law (NYSM 2017b).

Any cultural resources investigations conducted for those components of future offshore wind energy development projects located in the AoA will not require a State Lands Permit. This is because the AoA is located on the OCS, beneath federal waters, and would be located outside of submerged lands under state waters.¹

1.3.2.2 Section 14.09 of the New York State Historic Preservation Act

The New York State Historic Preservation Act (NYSHPA) was enacted in 1980 to provide for the protection of cultural resources and properties that are listed in the NRHP, or that are listed or determined eligible for listing in the New York State Register of Historic Places (SRHP). The NYSHPA was developed as the state equivalent of the NHPA, and Section 14.09 of the NYSHPA

¹ It is noted that any components of future wind energy development projects located offshore of New York State that are located on submerged land beneath state waters, defined as the offshore area located within 3 nautical miles of the shoreline of New York State, would require a State Lands Permit, issued by NYSM pursuant to Section 233 of the New York State Education Law. This is discussed in the Cable Landfall Permitting Study (also appended to this Master Plan).

is similar to Section 106 of the NHPA in that any planned activities conducted by state agencies, or requiring a permit or other approval by a state agency, must be reviewed under Section 14.09 to consider whether such planned activities may or will cause any change, beneficial or adverse, in the quality of any historic, architectural, or archaeological, or cultural property that is listed on the NRHP or is listed, or determined eligible for listing, on the SRHP. Section 14.09 of the NYSHPA also requires state agencies, to the fullest extent practicable, consistent with other provisions of the law, to avoid or mitigate adverse impacts on such properties, to explore all feasible and prudent alternatives, and to give due consideration to feasible and prudent plans that would avoid or mitigate adverse impacts on such properties (OPRHP 2017a).

However, Section 14.09's implementing regulations at 9 NYCRR § 428.2, Coordination with other review procedures, specifically states that "No project requiring review by the commissioner acting in his capacity as State Historic Preservation Officer in accordance with Section 106 of the National Historic Preservation Act of 1966, as implemented by the regulations of the Federal Advisory Council on Historic Preservation, "Protection of Historic and Cultural Properties" (36 CFR 800), shall be reviewed in accordance with these procedures" (OPRHP 2017b). Therefore, compliance with Section 14.09 of the NYSHPA is not required for, and is not applicable to, future wind energy development projects located offshore of New York State that are subject to review under Section 106 of the NHPA.

2 Data and Literature Review

This section summarizes the results of the data and literature review that was conducted for this Study. The purpose for the review was to identify the types of cultural resources and historic properties that are known to be located within the offshore and onshore portions of the AoA. This information is then used to support the cultural resources sensitivity assessment of the AoA and the risk assessment related to the potential impacts and effects of future wind energy development projects located offshore of New York State on cultural resources (see Section 3).

Information regarding previously identified and recorded cultural resources and historic properties located within the offshore and onshore portions of the AoA was obtained from federal and State agency databases for cultural resources and historic properties, as discussed below in Section 2.1. A summary of this information is presented in Section 2.2. Based on this information, the following three broad categories of cultural resources are or can be reasonably expected to be present in the AoA:

- Submerged cultural resources in the offshore portion of the AoA (e.g., submerged archaeological sites, shipwrecks, planes, etc., and built resources such as cables, transmission lines, and artificial reefs).
- Onshore cultural resources (e.g., architectural or other built resources such as individual buildings and structures, historic districts, parks, etc.), and landscapes or seascapes such as cultural, historical, or traditional landscapes or seascapes.
- Traditional cultural properties (TCPs), which include resources of interest or concern to indigenous nations.

Information regarding previously identified and recorded cultural resources and historic properties is subject to change, as the federal and state databases that contain such information are regularly updated with the results of cultural resources investigations as they are completed and accepted by the regulating agencies that maintain these databases. Therefore, it is possible the types and numbers of previously identified and recorded cultural resources and historic properties within the offshore and onshore portions of the AoA may change between the publication of this Study and the implementation of any cultural resources investigations required by regulating agencies in connection with future wind energy project development offshore of New York State.

The information regarding previously identified and recorded cultural resources and historic properties within the offshore and onshore portions of the AoA is not intended to be used as a substitute for data and literature reviews that would be conducted as part of any cultural resources investigations for specific offshore wind energy development projects that would be required by BOEM as part of its Section 106 review of such projects in accordance with BOEM's 2016 PA. Rather, it is intended to provide developers of offshore wind energy development projects with a broad understanding of the types of cultural resources that are, or can reasonably be expected to be, located within the offshore and onshore portions of the AoA.

2.1 Methods

Information regarding previously identified and recorded cultural resources and historic properties within the AoA was obtained by conducting a desktop analysis of federal and state databases to obtain descriptive information where available, including the results of any previously conducted NRHP-eligibility determinations. The federal databases consulted for this Study included the following:

- National Park Service's (NPS's) electronic database for the NRHP, which contains information regarding NRHP-listed historic properties that are primarily architectural or built resources. This database does not include information regarding NRHP-eligible resources that are considered historic properties pursuant to Section 106 of the NHPA, nor (for confidentiality reasons pursuant to Section 304 of the NHPA) does it include information regarding NRHP-listed historic properties that are archaeological resources (NPS 2017a).
- NPS's electronic database for NHLs, which are historic properties determined to have exceptional national significance (NPS 2017b).
- National Oceanic and Atmospheric Administration's (NOAA's) 2016 Wrecks and Obstructions Database, which provides information regarding shipwrecks, obstructions and charted pipelines and transmission cables from the Electronic Navigational Chart (ENC) layers (NOAA 2016a).
- NOAA's Automated Wreck and Obstruction Information System (AWOIS), which provides information regarding shipwrecks and obstructions (NOAA 2016b).

All of these federal sources are searchable databases that provide information regarding identified resources and properties. In the case of the NPS's electronic database for the NRHP, NPS is in the process of developing electronic versions of NRHP nomination forms for its NRHP-listed historic properties; therefore, these forms are available for many, but not all, NRHP-listed historic properties.

The New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) maintains a single state database for previously identified and recorded cultural resources and historic properties: the OPRHP's Cultural Resources Information System (CRIS). CRIS contains information regarding previously identified cultural resources, including historic buildings and structures, archaeological sites, resources listed or previously determined eligible for listing in the SRHP, and properties listed or previously determined eligible for listing in the NRHP. CRIS is a searchable database with a geographic information systems (GIS) component that provides the most up-to-date information regarding previously identified and recorded cultural resources and historic properties in New York State, as well as information regarding previously conducted cultural resources investigations. It includes electronic versions of the records of archaeological and architectural surveys, including digital images, national and state register documentation, inventory and survey forms and reports, and legacy data. It serves as the primary resource for background research and for determining the sensitivity of a region based on the presence and/or absence of historical resources (OPRHP 2017c).

Electronic versions of BOEM's reports related to studies within the AoA were also reviewed to obtain information regarding previously identified and recorded cultural resources and historic properties.

These reports included the following:

- BOEM's 2012 *Inventory and Analysis of Archaeological Site Occurrence on the Atlantic Outer Continental Shelf*. This study includes information on historic shipwrecks and an assessment of the potential occurrence of archaeological sites based on reconstruction of past landscapes, human settlement patterns, and site formation and preservation conditions on the OCS, particularly during the period of coastal transgression. The results of the study include the potential occurrence of archaeological sites indicated by an area's sensitivity ranking (none, low, or high). The study also provides a historic context and database for historic shipwrecks within the Atlantic OCS region (TRC Environmental Corporation 2012).
- BOEM's 2012 *Evaluation of Visual Impacts on Cultural Resources/Historic Properties North Atlantic, Mid-Atlantic, South Atlantic, and Florida Straits, Volume 1: Technical Report, Volume 2: Appendices*. This study was intended to provide a baseline of cultural information to assist with preplanning decisions related to renewable energy development in the Atlantic. This information was compiled to assist with compliance with the NHPA and NEPA with respect to the siting of offshore energy facilities, and to provide an assessment of how these cultural resources could be visually impacted, thus resulting in a loss of integrity and reduction of visitation levels. The study corridor encompassed a coastal strip and extended inland for 0.25 miles. Data were collected from the OPRHP, the NPS's NRHP database, local communities, government agencies, and indigenous nations (Klein et al. 2012a, 2012b).

General cultural contexts for each type of cultural resource that is, or is reasonably expected to be, present within the AoA for this Study is provided below in Section 2.2. These general contexts are intended to provide an overview of the indigenous and Euro-American presence, settlement, and/or use of the offshore and onshore portions of the AoA as related to previously identified and recorded cultural resources and historic properties. It is noted that detailed project-specific cultural contexts would be developed for individual projects, as such projects are planned by developers, in accordance with federal and state guidance for cultural resources investigations, as discussed below in Section 4.

2.2 Summary of Findings

This section presents the results of the data and literature review performed to determine the presence of previously identified and recorded cultural resources and historic properties within the offshore and onshore portions of the AoA. The following subsections provide a brief overview of the cultural context for each of type of cultural resource and a summary of the information for previously identified and recorded cultural resources and historic properties that were identified for each type of cultural resource.

2.2.1 Submerged (Underwater) Cultural Resources in the AoA

Submerged cultural resources can be divided into three broad categories: submerged indigenous archaeological sites; shipwrecks or other objects such as plane wrecks; and submerged architectural or other built resources such as pipelines, cables, or artificial reefs.

Submerged indigenous archaeological sites would be located in areas of the offshore AoA that were once associated with onshore (terrestrial) settings but are now located in submerged locations due to rising sea levels. While no indigenous archaeological sites have been identified within the offshore AoA for this study, a general cultural context for submerged indigenous archaeological sites, and the potential for the presence of previously unidentified and unrecorded submerged indigenous archaeological sites, is discussed in greater detail in Section 2.2.1.1.

Shipwrecks and other objects, which may consist of aircraft remains and a variety of objects purposely or unintentionally disposed of in the offshore AoA, have been previously identified and recorded within the offshore AoA. A general cultural context for such resources, a summary of the information regarding previously identified and recorded shipwrecks and other objects, and the potential for the presence of additional similar cultural resources, is discussed in greater detail in Section 2.2.1.2.

Submerged architectural or other built resources, primarily consisting of underwater cables, have also been previously identified and recorded within the offshore AoA. A general cultural context for such resources, a summary of the information regarding previously identified and recorded submerged architectural or built resources, and the potential for the presence of additional similar cultural resources, is discussed in greater detail in Section 2.2.1.3.

No formal underwater cultural resources investigations have taken place in the offshore portion of the AoA to locate submerged (underwater) cultural resources. However, most of the area along the New Jersey and New York shorelines in the vicinity of the offshore portion of the AoA, known as the New York Bight, has been mapped using side-scan sonar; in particular, the Hudson Shelf Valley, the submerged channel of the Hudson River on the OCS in this area, has been investigated (TRC Environmental Corporation 2012).

In addition to the side-scan sonar mapping, several underwater cultural resources investigations have been conducted outside of the AoA, in nearshore and offshore areas along the southern shoreline of Long Island. The investigations conducted just outside the offshore portion of the AoA included investigations of sand borrow areas (Krivor and James 2005; Watts 2013), investigations for dredging of the Ambrose Channel (Lydecker and James 2002, 2009), and an investigation of the Raritan Bay Loop Natural Gas Pipeline (Schmidt et al. 2017). Collectively, these three archaeological investigations found 64 likely cultural resources and much debris and small objects within their respective study areas. Additionally, the investigation of the Raritan Bay Loop Natural Gas Pipeline included boring to look for submerged paleosols with the potential for being archaeologically sensitive. Results of this boring program indicated that any paleosols that might have existed prior to sea level rise were destroyed by marine transgression (Schmidt et al. 2017). While the information derived from all of these studies and investigations is for locations outside the AoA, it suggests that similar information regarding cultural resources may be required as part of cultural resources investigations for future site-specific wind energy development projects within the offshore portion of the AoA.

2.2.1.1 Submerged Indigenous Archaeological Sites

An evaluation of the prehistoric maritime cultural landscapes of the Atlantic coast in the New York Bight, an offshore area extending from southern New Jersey to southeastern Massachusetts, indicated that these coastal regions were occupied by ancestors of historic and modern Algonquin-speaking indigenous peoples for more than 12,000 years. In the late Pleistocene and early Holocene periods, at the time of retreating glaciers, much of the OCS off New York was exposed and was available for

occupation by indigenous people. During these periods, what is now the OCS was a vastly different landscape and was home to a variety of plants and animals, including forests and various species of megafauna. It was not until the Holocene, as Earth's climate warmed and sea levels rose, that environmental conditions on previously exposed portions of the OCS transitioned into marshlands and brackish water environments and then became fully inundated, creating the current shoreline of New York State. Therefore, archaeologists studying these areas acknowledge that many early indigenous archaeological sites are now underwater (Merwin 2016a; TRC Environmental Corporation 2012).

To date, no previously identified and recorded submerged indigenous archaeological sites have been identified in the offshore portion of the AoA, although no formal archaeological investigations within the offshore portion of the AoA have been conducted to identify submerged landforms with potential for containing submerged indigenous archaeological sites or to identify submerged indigenous resources (OPRHP 2017c).

As noted in Section 2.1, BOEM authorized a study of the Atlantic OCS, which included modelling the potential for submerged indigenous archaeological sites based on reconstruction of past landscapes, human settlement patterns, and site formation and preservation conditions, particularly during the period of coastal transgression when sea levels rose due to melting of the glaciers (TRC Environmental Corporation 2012). The results of that study were used to evaluate the Atlantic OCS and identify potential areas where submerged indigenous archaeological sites may be located. Based, in part, on this information, approximately half of the offshore portion of the AoA (i.e., the areas closest to the current shorelines of New Jersey and New York) has been assessed as having high sensitivity for containing indigenous archaeological sites (see Figure 2). Further offshore, the sensitivity decreases, with the remaining approximately half of the offshore portion of the AoA assessed as having low or no sensitivity for containing indigenous archaeological sites (TRC Environmental Corporation 2012).

Additionally, a number of previously identified and recorded, fully or partially submerged, indigenous archaeological sites, which date primarily to the indigenous Archaic cultural period (approximately 10,000 years to 2,700 years before present) are located in similar settings in other parts of the New York Bight, including: fully submerged archaeological sites along the shoreline of Long Island Sound (on the north side of Long Island and on the southern shore of Connecticut); and partially submerged (intertidal) sites along the Taunton River in Massachusetts and along Narragansett Bay in Rhode Island (Merwin 2010, 2016a). While the NRHP eligibility of these sites, which are located outside the AoA, is unknown, their locations suggest that similar sites could be encountered within the AoA.

Conversely, the investigation of the Raritan Bay Loop Natural Gas Pipeline, which occurred in nearshore and offshore areas along the southern shoreline of Long Island outside of the AoA, included borings to look for submerged paleolandforms with paleosols with the potential for being archaeologically sensitive. Results of this boring program indicated that any paleosols that may have existed prior to sea level rise were destroyed by marine transgression (Schmidt et al. 2017).

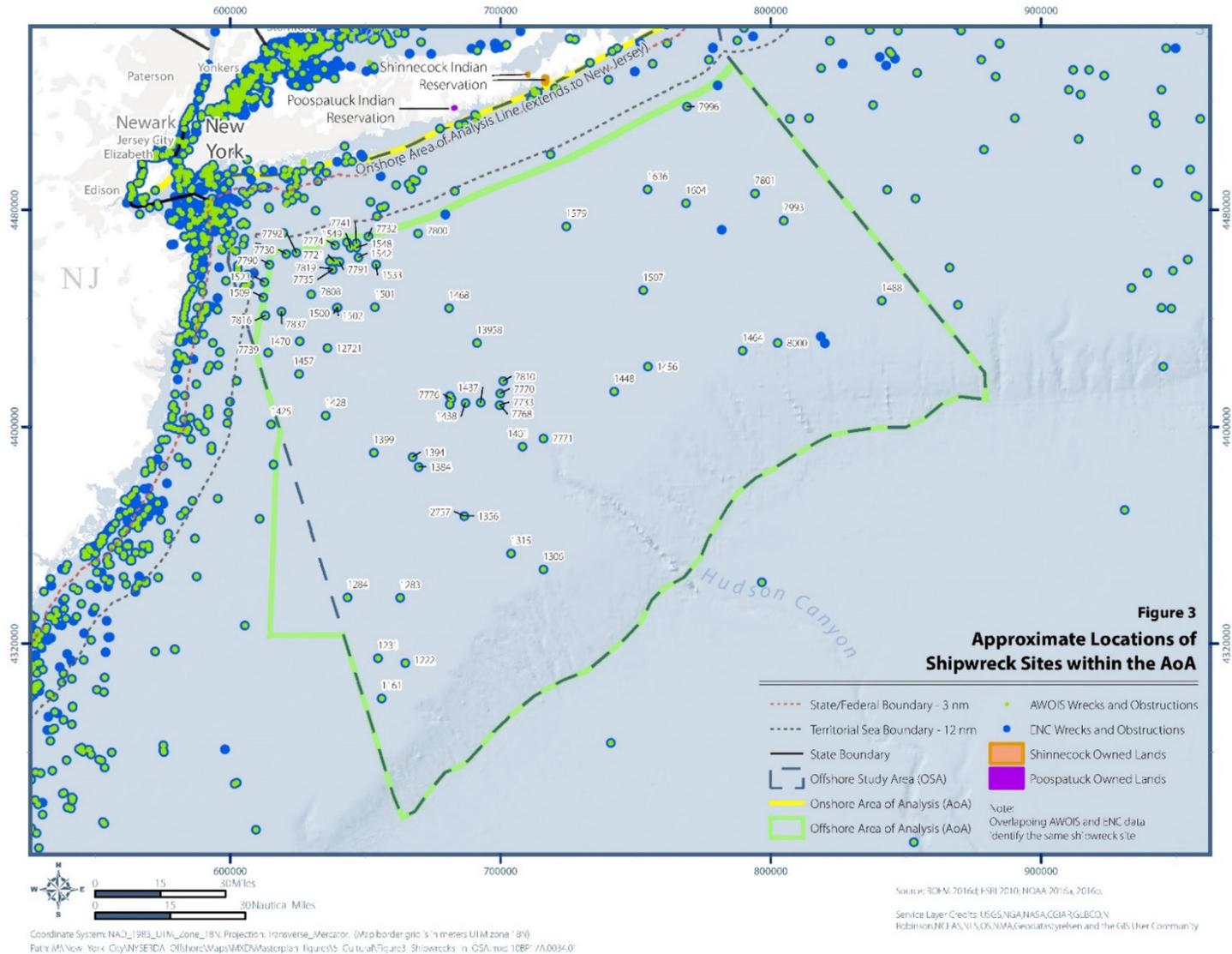
2.2.1.2 Shipwrecks and Other Objects

In addition to the coastal occupation and settlement of New York's indigenous people prior to the arrival of Europeans, which would have included maritime activities as part of fishing and hunting, the offshore portion of the AoA has been the site of Euro-American activities associated with resource procurement and trade since the earliest arrival of Europeans. Early European exploration and settlement of New York began with the exploration of the Hudson River by Henry Hudson shortly after establishment of the colony of Jamestown in Virginia in 1607 and a settlement on the island of Manhattan in 1610 to initiate a relationship with indigenous nations as part of the fur trade. Since that time, the offshore portion of the AoA has been associated with the major commercial shipping routes into New York Harbor, one of the busiest commercial ports in the United States (TRC Environmental Corporation 2012).

The natural configuration of the coastline in the vicinity of the New York Harbor requires mariners to negotiate the funnel between Sandy Hook, New Jersey, and Rockaway Point, New York, which is straddled by the offshore portion of the AoA. Shifting shorelines and inlets over time have redefined and redirected navigation and access into the sheltered anchorages of the shallow sounds behind Long Island's barrier beaches, affecting and limiting the approaches that vessels could use to enter New York area harbors (TRC Environmental Corporation 2012). As a result of Euro-American settlement along the New Jersey and New York shorelines and the continually increasing ship traffic in the area that was, and continues to be, associated with maritime resource procurement, trade, communication, and transportation, historic and modern shipwrecks have littered the offshore portion of the AoA (see Figure 3).

Figure 3. Approximate Locations of Shipwrecks within the AoA.

Source: BOEM 2016d; ESRI 2010; NOAA 2016 a, 2016b



A total of 60 charted and uncharted wrecks, almost entirely vessels, were identified from NOAA databases within the offshore portion of the AoA (NOAA 2016a, 2016b). None of these wrecks appear to have been evaluated for NRHP eligibility, so it is unknown whether any are NRHP eligible. However, the dates for vessel or object construction, and the dates for foundering, suggest that many such vessels appear to be at least 50 years old or were sunk over 50 years ago and thus would be old enough to be considered for potential NRHP eligibility.

The spatial distribution for these reported or suspected wrecks indicates that the greatest number of wrecks are in the northwestern corner of the offshore portion of the AoA, which is the area that is closest to the New York Harbor and would have the greatest concentration of ship traffic in and out of this area (see Figure 3). In general, the remainder of the AoA has a relatively dispersed scattering of known wrecks, although overall, the number of reported or suspected wrecks appears to decrease as the distance from the harbor increases. However, there is one notable exception: a group of six shipwrecks and one collapsed built resource (Texas Tower 4; discussed below) just to the west of the center of the AoA, adjacent to the Hudson Shelf/Hudson Canyon. This grouping is comprised of three unnamed vessels (ID Nos. 1437, 7770, and 7776), the Bidevind (ID No. 1438), Texas Tower No. 4 (ID No. 7733), the Texas Tower barge (ID No. 7768), and the Bacardi (ID No. 7810). Two of these wrecks, Texas Tower No. 4 and its barge, likely occurred at the same time (see discussion below); the reasons for the sinking of the remainder of the vessels that comprise this grouping is not clear from the information included in NOAA's shipwreck data.

The now collapsed Texas Tower 4 radar facility is located within the offshore portion of the AoA, approximately 90 nautical miles south of Rockaway Point, New York. It was constructed between 1957 and 1958, when the New York area was used for missile detection during the Cold War (1945–1989). In 1949 the Soviet Union developed nuclear weapons technology, and in 1953 the Soviets exploded a thermonuclear device. President Eisenhower reacted by putting in a program to improve the nation's missile defenses (NORAD 2013). The program became known as the Distant Early Warning System (Ray 1965; Jin et al. 2002; NORAD 2013; Aqua Explorers 2017).

A total of five offshore radar installations were proposed for the Distant Early Warning System along the east coast of the United States. These five installations were known as "Texas Towers" because their design was based on a design of the same name that was used for offshore oil platforms in the Gulf of Mexico. The Texas Tower 4 radar facility was in operation until its collapse in 1961 (Ray 1965; Jin et al. 2002; NORAD 2013; Aqua Explorers 2017).

Texas Tower 4 was recognized as unstable from the beginning of its construction. Hurricane Donna in September of 1960 severely damaged the radar facility, and a severe winter storm in January of 1961 caused the radar facility to collapse entirely. Twenty-eight people died as a result of the Texas Tower 4 collapse: 14 United States Air Force personnel and 14 repair staff. Because only two bodies were recovered, human remains may be present at the site of the collapse (Ray 1965; Jin et al. 2002; NORAD 2013; Aqua Explorers 2017). The Texas Tower 4 collapse and the associated deaths led to a congressional hearing on the incident (United States Senate 1961).

The wreck datasets developed by NOAA provide limited descriptive information regarding the 60 charted and uncharted wrecks located within the offshore portion of the AoA (see Table 1).² Functionally, the wrecks exhibit a wide range of variability, consisting of gunboats, steamers, tugboats or clam dredges, fishing vessels, patrol vessels, a combination passenger and cargo ship, tankers, schooners, cargo ships, freighters, barges, galleys, a plane, a collapsed radar tower, and 19 wrecks whose nature is unknown.

Table 1. Wrecks on Record with NOAA’s Office of Coast Survey

Source: NOAA 2016a, 2016b.

I.D. No.	Name	Condition	Description
1222	<i>Carolina</i>	Not charted - cargo	Passenger and cargo ship, sunk by a German submarine on “Black Sunday” 6/2/1918. Aka ‘City of Savannah’ and ‘La Grande Duchesse’
1231/1161	<i>Texel</i>	Not charted - cargo	Tanker, sunk by a German submarine on “Black Sunday” 6/2/1918.
1283	<i>Isabel B. Wiley</i>	Not charted - schooner	Wooden schooner, sunk by a German submarine on “Black Sunday” 6/2/1918
1284	<i>Edward H. Cole</i>	Not charted – schooner	Schooner, sunk by a German submarine on “Black Sunday” 6/2/1918
1306	<i>Rio Tercero</i>	Not charted - cargo	Cargo Ship, sunk by a German submarine on 6/22/1942
1356	<i>Winneconne</i>	Not charted - cargo	Cargo ship, sunk by a German submarine on “Black Sunday” 6/2/1918
1384	<i>Jacob Haskell</i>	Submerged, non-dangerous	Wood- and steel-hulled schooner, built in Rockland, Maine, in 1901; sunk by a German submarine on “Black Sunday” 6/2/1918
1394	<i>Herbert Parker</i>	Not charted	Sank before WWII
1399	<i>Corvallis</i>	Not charted - cargo	Cargo ship, sank before WWII
1401	Unknown	Not charted	Sank 10/22/43, reported 4/13/44; position accuracy 1 mile

² It is noted here that many of NOAA’s AWOIS-/ENC-listed wrecks have been reported based on readings from older technology or by observations from local informants. Therefore, the locations of wreck sites would need to be verified as part of cultural resources investigations for any future wind energy development projects that will be located offshore of New York State.

Table 1 continued.

I.D. No.	Name	Condition	Description
1425/ 1470	<i>Lillian</i>	Submerged, dangerous	Built in 1920 by the Bethlehem Ship Building Company. Cargo vessel hauling sugar. Sank on 2/6/1939 due to vessel collision. Vessel broken up and may exist in multiple locations.
1428	<i>R.P. Resor</i>	Submerged, non-dangerous	Oil tanker built in 1935 by the Federal Ship Building Company. Owned by Standard Oil when it was sunk by a submarine on 2/27/1942
1437	Unknown	Not charted	Unknown
1438	<i>Bidevind</i>	Submerged, non-dangerous	Norwegian freighter built in Germany in 1938. A German submarine sunk the Bidevind on 4/30/1942
1448	<i>Sagun</i>	Not charted - schooner	Schooner, sank on 3/1/14 due to vessel collision
1456	<i>Sea King</i>	Not charted	Unknown obstruction
1457	<i>Huron</i>	Submerged, non-dangerous	Barge, sank on 10/12/1951
1464	Unknown	Not charted	Unknown obstruction
1468	<i>Sammerstad</i>	Submerged, non-dangerous	Cargo ship built in New Castle, England in 1906. Sunk by a German submarine on 8/12/1918
1488	<i>Fillet</i>	Not charted	Unknown
1500/ 1502	<i>Catamount</i>	Submerged, non-dangerous	U.S. patrol vessel, sunk by German submarine on 3/27/1943
1501	<i>Subchaser 209</i>	Not charted	U.S. patrol boat, sunk by German submarine on 8/27/1918
1507	<i>Maiden Creek</i>	Not charted	Cargo ship, sunk 12/31/1942
1509	<i>Arundo</i>	Not charted	Freighter carrying troop supplies, mostly beer; sunk by a German submarine on 4/28/1942.
1523	Unknown	Not charted	Unknown
1533	<i>Burnside</i>	Submerged, non-dangerous	Schooner, sank on 4/20/1913
1542	<i>Tarantula</i>	Not charted	Navy gunboat built in 1912; sank on 10/28/1918 after colliding with the SS Frisia
1548	<i>Yankee</i>	Submerged, non-dangerous	Great Lakes steamer built in 1890. AKA G&D. Collided with another vessel and sank on 6/11/1919
1549	<i>Coastwise</i>	Submerged, non-dangerous	Sank before WW II
1579	<i>Coimbra</i>	Submerged, non-dangerous to navigation	Oil tanker built in Kiel, Germany, in 1937. Owned by the Socony Vacuum Oil Company of Great Britain when it was sunk by a German submarine on 1/5/1942
1604	<i>Edward B. Winslow</i>	Not charted	Schooner, sank on 12/12/1928
1636	<i>Sunco</i>	Not charted	Tanker, sunk 1/2/1945
2757	<i>Kenneback</i>	Not charted	Unknown
7721	<i>Durley Chine</i>	Submerged, non-dangerous	Canadian Cargo ship built in Sunderland, England, in 1913. Collided with another vessel and sank on 4/22/1917. Same ship as the Bacardi listed as ID 7810
7730	<i>Eureka</i>	Submerged, non-dangerous	Tugboat or clam dredge built in 1898. Likely same as Broadcast (ID 7792)

Table 1 continued.

I.D. No.	Name	Condition	Description
7732	<i>Skippy</i>	Submerged, non-dangerous	Identified as Skippy
7733	<i>Texas Tower 4</i>	Submerged, dangerous to navigation	Tower for Distant Early Warning System radar facility. Station was built in Maine in 1957 and installed offshore New York in 1958. Storms destroyed the station in 1961.
7735	Unknown	Submerged, non-dangerous	Unknown
7739	<i>Stolt Dagali</i>	Submerged dangerous	Norwegian steel-hulled tanker. Carrying food products when it collided with the SS Shalom and sank on 11/26/1964.
7741	Unknown	Submerged, non-dangerous	Identified as 59 Pounder
7768	<i>Texas Tower 4 Barge</i>	Submerged, dangerous to navigation	Barge used to transport the Texas Tower 4 Distant Early Warning System radar facility
7770	Unknown	Submerged, non-dangerous	Identified as a barge
7771	<i>Canton Mouth</i>	Submerged, non-dangerous	Identified as Canton Mouth
7774	<i>Happy Days</i>	Submerged, non-dangerous	Wooden schooner, possibly a lobster boat
7776	Unknown	Submerged, non-dangerous	Identified as West Wreck.
7790	<i>Immaculata</i>	Submerged, non-dangerous	Garbage barge operating in the 1920s
7791	<i>Irma C</i>	Submerged, non-dangerous	Possible coal barge
7792	<i>Broadcast</i>	Submerged, non-dangerous	Tugboat or clam dredge. Built in 1898. Likely same as Eureka (ID 7730)
7800	<i>Linda</i>	Submerged, non-dangerous	Small wooden schooner. Date of construction unknown
7808	<i>Austin W</i>	Submerged, non-dangerous	Identified as Austin W
7810	<i>Bacardi</i>	Submerged, non-dangerous	Canadian cargo ship built in Sunderland, England, in 1913. Collided with another vessel and sank on 4/22/1917. Same ship as the Durley Chine listed as ID 7721.
7816	<i>Galley</i>	Submerged, non-dangerous	Identified as Galley
7819	Unknown	Submerged, non-dangerous	Identified as a schooner
7801	<i>Snug Harbor</i>	Submerged, non-dangerous	Description 195 Loran C rates provided by Mr. Richard Taracka, Greenwich, CT, Police Department; identified as Snug Harbor
7837	<i>Cranford</i>	Dangerous to navigation	Identified as Cranford
7993	Unknown	Submerged, non-dangerous	Unknown

Table 1 continued.

I.D. No.	Name	Condition	Description
7996	Aircraft	Submerged, non-dangerous	History Nm2/60--1/9/60; buoy established 18.1 miles, 174 degrees from Montauk Point Light to mark a sunken aircraft
8000	<i>Wild Duck</i>	Submerged, non-dangerous	Fishing Vessel, sank on 5/27/69
12721	Unknown	Not charted	History H1061 1/95-- Opr-B389-Cn; uncharted wreck. Mb Ld Of 133 feet (40.69 meters)
13958	Unknown	Submerged, non-dangerous	Feature is an uncharted wreck

There is too little information regarding 24 of the 60 wrecks in Table 1 to determine the ships' ages without in-depth research. However, for the remaining 36 wrecks, those wrecks that are ships appear to date to between the late 19th and mid-20th centuries. Similarly for most of the wrecks in Table 1, the date of the wreck is unknown. However, 12 of the shipwrecks occurred during World War I, including eight that were sunk by German submarines, and eight occurred during World War II, including six that were sunk by German submarines.

The offshore portion of the AoA was also the location of an infamous event during World War I known as "Black Sunday." On June 2, 1918, five cargo vessels and one passenger ship that served as a passenger and cargo ship were torpedoed and sunk by German U-boat 151. The submarine also attacked and damaged two other ships on the same day, although they did not sink (Prendergast 2002). The six ships that were torpedoed and sunk in the offshore portion of the AoA consist of the Carolina (ID No. 1222; passenger and cargo ship), Winneconne (ID No. 1356; cargo ship), Isabel B. Wiley (ID No. 1283; cargo ship), Edward H. Cole (ID No. 1284; cargo ship), Texel (ID No. 1231/1161; cargo ship), and the Jacob Haskell (ID No. 1384; cargo ship). All of these sinkings occurred in the southwestern part of the offshore AoA (see Figure 3).

Additionally, the OPRHP maintains an unpublished list of information for hundreds of shipwrecks located along the New York coastline and on the OCS. This information has been collected from various sources, including the USACE, U.S. Coast Guard, offshore survey reports, and various publications within the historic record. The New York shipwrecks included in this unpublished list do not always directly relate to shipwrecks included in NOAA's AWOIS and ENC databases. However, this list indicates that a total of 72 suspected, reported, or confirmed shipwreck sites included in the OPRHP's unpublished list are outside of, but adjacent to, the offshore portion of the AoA (see Table 2),

including the seven New York shipwrecks listed in Table 2 that have AWOIS numbers (Merwin 2016b). Because the 72 suspected, reported, or confirmed shipwreck sites are located outside the offshore portion of the AoA, they are not shown on Figure 3. However, they are included in the analysis of information for shipwrecks and other objects because they provide additional information regarding the types of additional previously unidentified wrecked vessels that could also be present in the offshore portion of the AoA.

Table 2. Unpublished Shipwrecks on File with the OPRHP

Source: Merwin 2016b

Resource Name	Vessel Type	Reporting Status	Resource/Wreck Description
<i>Halcyon</i>	Steam screw	Suspect	Steam vessel foundered in the vicinity of Coney Island in 1923
<i>Phillip J. Kenny</i>	Steam screw	Suspect	Reported burned off Ambrose Channel in 1923
	Sloop	Suspect	Reported loss of sloop south of Coney Island near East Bank in 1744
<i>Shrewsbury</i>	Sloop	Suspect	Sloop lost on Coney Island in 1747
	Sloop	Suspect	Reported loss of sloop on East Bank south of Coney Island in 1753
<i>Generous Friends</i>	Troop transport	Suspect	Reported sinking of a troop transport near Coney Island in 1776
<i>Sally</i>	Merchantman	Suspect	Reported wrecked on Coney Island in 1789
<i>Albion</i>	Merchantman	Suspect	Merchant ship reported wrecked on Coney Island in 1818
<i>Speculator</i>	Schooner	Suspect	Schooner reported sunk off Coney Island in 1831
<i>George L. Garlick</i>	Steam tugboat	Suspect	Steam tugboat reported wrecked on or near Coney Island in 1897
<i>Spectacular</i>	Schooner	Suspect	Reported loss of schooner off Coney Island in 1831
<i>Halcyon</i>	Steam screw	Suspect	Reported foundering of steamer off Coney Island in 1923
<i>Cornelia Soule</i>	Schooner	Reported	306-ton, 3-masted schooner sank one mile off Rockaway Point. Loran C, 26954.7, 43759.1. Referred to as the "granite wreck." Granite slabs and steering mechanism exposed. Near wreck of the <i>Black Warrior</i> . According to 2009 survey by PBS&J, wreck corresponds with AWOIS 7720 and is located 600 feet south of Fort Tilden.
<i>Mary E. Turner</i>	Schooner	Suspect	Norfolk, Virginia, schooner apparently lost one mile east of Rockaway Beach village
		Reported	"Louie's pier wreck" sank at end of last pier at Rockaway Point
<i>Joanna</i>	Oil screw	Suspect	36-ton oil screw stranded on Rockaway Beach; Reg. No. 209945
<i>James W. Boyle</i>	Steamer	Reported	41-ton steamer wrecked at Rockaway Inlet
<i>James A. Cox</i>	Steamer	Reported	61-ton steamer foundered on Rockaway Beach
<i>Gypsy</i>	Gas motor vessel	Suspect	11-ton gas screw vessel stranded on Rockaway Beach
<i>Geneva Mertis</i>	Excursion boat	Reported	50-ton gas motor vessel wrecked in a collision with an unknown vessel near Rockaway Inlet; Reg. No. 85437

Table 2 continued.

Resource Name	Vessel Type	Reporting Status	Resource/Wreck Description
<i>Evangeline</i>	Steamer	Reported	314-ton steamer wrecked at Rockaway
<i>R.S. Lindsay</i>	Schooner	Reported	Schooner wrecked 04/10/1887 southwest of Rockaway life saving station
<i>Copia</i>	Schooner	Reported	135-ton "coal schooner" wrecked on Rockaway Beach off Rockaway Point
<i>Benson</i>	Barge	Reported	Benson is one of two barges and a tug scuttled off Jones Beach and drifting westward
<i>Alexa</i>	Schooner	Reported	British schooner lost near Rockaway Point opposite Coney Island life saving station
<i>Bronx Queen</i> Former Sc-635, Former Cg <i>Air Eider</i> , Former <i>Yank</i>	Fishing boat/former sub-chaser	Confirmed	Twin-diesel, wooden sub-chaser built in 1942 and converted to fishing boat. 107 ft. length, 18 ft. beam, 14 ft. depth, 99 tons. Loran 26968.8 / 43735.1
<i>Franklin</i>	Scow	Reported	Scow grounded and wrecked near Rockaway Inlet
<i>Martin Kehoe</i>	Steamer	Reported	111-ton screw steamer wrecked at Rockaway Inlet
<i>Priscilla</i>	Motor vessel	Reported	44-ton gas motor vessel wrecked at Rockaway shoals; Reg. No. 201591
<i>Two Brothers</i>	Steamer	Reported	139-ton steamer burned and wrecked at Rockaway Point; Reg. No. 145247
<i>Robert A. Snow</i>	Schooner	Reported	174-ton schooner wreck also known as the "derrick barge". Located at Rockaway Point (off Rockaway Beach, formerly Rockaway Inlet) near the wreck site of the <i>Black Warrior</i> . Loran C 26964.3, 43756.4
<i>Richard Morrell</i>	Schooner	Reported	Stranded and wrecked on the west shoals, Rockaway Inlet, 2.25 miles south of Coney Island life saving station
<i>Ajace</i>	Bark	Reported	566-ton Italian bark wrecked on Rockaway shoals, 2.5 miles from Manhattan Beach. Approx. Loran C coordinates are 26956.6, 43750.8. Loaded with scrap railroad iron and 2,040 empty petroleum barrels. Wreck is located 300 yards west of the wreck of the <i>Cornelia Soule</i> , inshore from the buoy marking wreck of the <i>Black Warrior</i> . According to 2009 survey by PBS&J, wreck corresponds to AWOIS 7719 and is located 1,500 ft. south of Fort Tilden.
<i>Finance</i>	Steamship	Reported	Wreck of 1883 steamship located approximately 3 miles east of Sandy Hook Lightship. 295 ft. in length, 38 ft. beam, 23 ft. depth
<i>Evelyn</i>	Schooner	Reported	Reported wrecked west of Rockaway Point
<i>Princess Anne</i>	Steamer	Suspect	3,629-ton steamer wrecked at Rockaway Shoals while attempting to approach Ambrose Channel. Loran C is 26968.3, 43758.1. Screw steamer built 1897, measured 350 ft. x 42 ft. x 27 ft. Reg. No. 150756
<i>Boyle</i>	Schooner	Suspect	Reportedly wrecked west of Rockaway Point
<i>Kenyon</i>	Schooner	Suspect	Reportedly wrecked west of Rockaway Point
<i>Governor</i>	Steam tugboat	Suspect	Reported sank between Rockaway Point and Swash Channel
<i>Charles E. Dunlap</i>	Schooner	Suspect	1,609-ton, four-masted schooner wrecked ashore at far Rockaway Beach. Loran C is 26929.8, 43755.2. Reg. No. 201500

Table 2 continued.

Resource Name	Vessel Type	Reporting Status	Resource/Wreck Description
<i>Black Warrior</i>	Steam/sail coastwise packet	Confirmed	1,556-ton coastwise paddlewheel steamer with walking beam engine and auxiliary sail built in 1852. Clipper-like hull, 225 ft. length, 37 ft. beam, 18 ft. depth, with three masts. Off Riis 42 Park, Rockaway Beach. Loran C is 26951.8 4343755.3. Widely known by sport divers
<i>Bristol</i>	Ship	Suspect	American bark wrecked in vicinity of Rockaway Beach
<i>Yonkers, Ex Tennyson, Deutschland</i>	Downeaster converted To barge	Reported	Site of wrecked coal barge at Loran 26128.9, 43793.8. Bell recovered from site in 1967 by John Dudas inscribed "Tennyson 1864"
<i>USS Turner</i>	WWII destroyer	Reported	Debris field associated with the explosion and sinking of the <i>Turner</i> , dd-648, at Loran 26936.4, 43725.6. Near the east side of the Ambrose Channel. Salvage efforts in 1944 removed large sections of wreck. Remainder was demolished with explosives.
<i>Liverpool</i>	Frigate	Suspect	Sixth-rate frigate with 28 guns wrecked on Rockaway Beach in 1777 or 1778. 118.5 ft. length, 34 beam, 590 gross tons. Believed buried in the beach.
<i>Mistletoe</i>	Sidewheel Steamer	Reported	Located southwest of the Rockaway Beach artificial reef, developed beginning in 1967, approximately 4 miles southwest of far Rockaway and 1 mile offshore. Loran 26933.3, 43747.6. Steamer originally measured 152 ft. x 26 ft. x 9 ft. Wreck site contains paddlewheels, shafts, walking beam engine and boilers in addition to general debris. Corps of Engineers took action shortly after wreck to remove obstruction to navigation. According to a 2009 survey by PBS&J, wreck corresponds to AWOIS 1649 and is 4,000 ft. south of Jacob Riis Park.
<i>Mamie K.</i>	Motorboat	Suspect	Wreck of motor boat 4 miles west of Rockaway Beach
<i>HMS Pentland Firth</i>	Unknown	Suspect	Wreck of 500-ton "British oil screw" at lat. 40.27.45, long. 73.49.30 off Rockaway Inlet
<i>Ruth Shaw</i>	Barge	Suspect	485-ton barge foundered 2 miles southeast of Jones Inlet; buoy at lat. 40.29., long. 73.45.
<i>Franklin</i>	Scow	Suspect	Wreck of scow near Rockaway Inlet
<i>East Wreck 3</i>	Coal Barges	Suspect	Reported loss of three coal barges "in a triangle within 5 miles of shore near Rockaway Point"
<i>Golden Nugget</i>	Unknown	Suspect	Unknown loss west of Rockaway Inlet
<i>Johanna</i>	Schooner	Suspect	Possible schooner wreck site at far Rockaway
<i>Statesman</i>	Schooner	Suspect	Schooner wrecked off Rockaway in 1870.
<i>Mic Mac</i>	Brig	Suspect	147-ton British brig wrecked off Rockaway Beach in 1873
<i>S.J. Lindsay</i>	Schooner	Suspect	Possible schooner wreck off Rockaway shoals
<i>Greenbury Willey</i>	Schooner	Suspect	Schooner <i>Greenbury Willey</i> of Seaford, Delaware, wrecked at Rockaway with cargo of phosphate in 1878
<i>James Lawrence</i>	Schooner	Suspect	Wreck of schooner one-quarter mile east of Rockaway life saving station in 1877
<i>NYC Scow</i>	Scow	Suspect	Wreck of scow 2 miles southwest of Rockaway Point life saving station in 1892
<i>Henrietta</i>	Schooner	Suspect	Schooner broke up "3 miles east of Arverne" in 1918 (placing wreck near or in East Rockaway Inlet if correctly described)

Table 2 continued.

Resource Name	Vessel Type	Reporting Status	Resource/Wreck Description
<i>Bernadette</i>	Motorboat	Suspect	Wrecked at Rockaway Beach in 1918
<i>Fort Victoria</i>	Steam Passenger Liner	Documented	Disarticulated fragments of 1913 steamship sunk in 1929. 40.48192500 n; 73.90626111 w. Wreck site scattered on south side of Ambrose Channel, approximately 5 miles south of Coney Island Beach and possibly over the line into New Jersey. Riveted hull sections, glass, and china scattered over the bottom
<i>Dryland</i>	Dredge	Confirmed	Remains of sunken dredge located at 40-27-15.7 N, 073-48-29.0 W near the eastern extension of the Ambrose Channel south of Rockaway. AWOIS 1607
<i>Sandy Hook</i>	Pilot Boat	Confirmed	Sunken steel pilot boat with detached bow at 40-27-33.3 N, 073-49-30.8 W near eastern extension of Ambrose Channel south of Rockaway. AWOIS 1615. Approximately 100 ft. length
<i>Relief</i>	Lightship	Confirmed	Sunken lightship at 40-27-08.6 N, 073-49-04.0 W near eastern extension of Ambrose Channel south of Rockaway. Wreckage is described as upright with one mast lying on deck. AWOIS 749
Unknown	Tugboat	Confirmed	Tugboat wreck with three-blade prop at 40-25-24.8 N, 73-54-00.1 W
Unknown	Steamship	Confirmed	Steel steamship wreck at 40-25-25.58 N, 73-52-13.77 W. Approximately 160 ft. length, with pointed bow
Unknown	Unknown	Confirmed	Wooden hull vessel of approximately 150 ft. length, with pointed bow at 40-26-02.2 N, 73-52-57.8 W
Unknown	Tugboat	Confirmed	53-ft. tug wreck at 40-25-22.4 N, 73-52-49.6 W
Unknown	Unknown	Confirmed	Wreck of 200 ft. steel ship at 40-27-51.4 N, 73-52-30.5 W
Unknown	Unknown	Confirmed	200 ft. wreck at 40-25-30.3 N, 73-54-04.2 W
<i>Corsair</i>	Cabin cruiser	Reported	Wreck of cabin cruiser 750 ft. south of Fort Tilden at AWOIS 13255

2.2.1.3 Submerged Architectural or Built Resources

In addition to the submerged indigenous archaeological sites and shipwrecks, the offshore portion of the AoA has the potential to contain underwater architectural or built resources. Submerged architectural or built resources include, but are not limited to, underwater telegraph and other telecommunication cables, underwater pipelines, artificial reefs, jetties, breakwalls, and other types of structures. One type of underwater built resource was identified during the data and literature review for this Study: eight underwater telegraph cables dating from the late 19th or early 20th century (see Table 3). The exact location of these resources is unknown, and their actual presence or function is also unknown. Additionally, none of these eight underwater telegraph cables appear to have been evaluated for NRHP eligibility, such that it is unknown whether any are NRHP eligible.

Underwater telegraph cables are linear built resources whose exact location is uncertain because they were often laid by ships in an era before global positioning and tracking technologies. During the late 19th and early 20th centuries, underwater telegraph cable routes were hand-plotted on charts between predetermined relay stations and laid out on the open ocean and under varying weather conditions. Ship captains were instructed to merely lay cable along a compass bearing between the specified stations (Burns 2016; Huudemann 2003).

Table 3. Underwater Built Resources within the AoA

Source: Burns 2016, Huudemann 2003.

Resource Type	Description	Owner	Date In Service	Functionality and Exact Location
Telegraph cable	Telegraph cable from Fayal, Azores, to Canso, Nova Scotia, to Far Rockaway, New York	Postal Telegraph Cable Company	1884	Unknown
Telegraph cable	Telegraph cable from Far Rockaway, New York, to Fayal, Azores, to Germany	Deutsche Atlantische Telegraphen Gesellschaft	1900	Unknown
Telegraph cable	Telegraph cable from Havana, Cuba, to New York	Commercial Cable Company of Cuba	1907	Unknown
Telegraph cable	Telegraph cable from Panama to Cuba to New York	Central and South American Telegraph Company	1915	Unknown
Telegraph cable	Telegraph cable from Haiti to New York	U.S. and Haiti Telephone and Cable Company	1922	Unknown
Telegraph cable	Telegraph cable from Cuba to New York	Mexican Telephone Company	1923	Unknown
Telegraph cable	Telegraph cable from Cuba to New York	Mexican Telephone Company	1924	Unknown
Telegraph cable	Telegraph cable from New York to Azores	Western Union Telegraph Company	1924	Unknown

The eight underwater telegraph cables have been identified as possibly intersecting the offshore portion of the AoA. Six of these cables were built after 1900 during a period of rapid expansion in the submarine cable business. Five of the post-1900 cables represent linkages to Cuba and Central America and were constructed between 1907 and 1924. The 1924 Western Union New York to Azores cable was built during the last wave of cable installation prior to the stock market crash in 1929.

Two of the eight underwater telegraph cables that appear to cross the offshore portion of the AoA may have the potential to be historically significant. The first is the Azores-Nova Scotia-New York underwater telegraph cable installed by the Postal Telegraph Cable Company in 1884. This was the first transatlantic telegraph cable designed and built to reach New York. Earlier cables had adjunct lines that were installed to connect to New York after the transatlantic installation to relay stations in Canada or New England (Burns 2016; Huudemann 2003). The endpoint for this cable is Far Rockaway on Long Island, and it is not known whether this cable crosses through any portion of the offshore portion of the AoA on its route from Nova Scotia to Far Rockaway.

The second cable that appears to cross the offshore portion of the AoA is the Germany-Azores-New York underwater telegraph cable installed by Deutsche Atlantische Telegraphen Gesellschaft in 1900. This appears to be the first transatlantic cable to New York that did not first connect to a relay station in Canada or New England (Burns 2016; Huudemann 2003). It is likely that this underwater telegraph cable route passes through the offshore portion of the AoA.

An examination of NOAA-issued nautical charts that cover portions of the offshore AoA indicates that numerous additional submerged built resources, primarily consisting of additional underwater cables that may be of modern (mid- to late 20th century) construction, are present within the offshore portion of the AoA. These various underwater cables tend to have landfalls that are clustered at: Averne, on Rockaway Beach; at Atlantic Beach and near Mastic Beach in New York; at South Amboy (after entering the Lower Bay of New York Harbor and continuing into the Raritan Bay); and at Sea Girt or Manasquan in New Jersey (NOAA 2017a-e).

2.2.2 Onshore (Terrestrial) Cultural Resources in the AoA

Onshore (terrestrial) cultural resources can be divided into three broad categories: archaeological sites, including indigenous and Euro-American archaeological sites; architectural or other built resources such as buildings, structures, roadways, public parks, etc.; and landscapes and seascapes, including historic and/or cultural landscapes. For the purposes of this discussion, only those types of onshore (terrestrial) cultural resources that are, or may be, located within the onshore portion of the AoA and could be visually impacted or affected by future wind energy development projects located offshore of New York State are considered. These types of resources consist of architectural or other built resources and landscapes or seascapes, as discussed below in Sections 2.2.2.1 and 2.2.2.2, respectively.

As discussed above in Section 1.1, onshore (terrestrial) archaeological resources located within the onshore portion of the AoA for this Study were not considered because the significance of archaeological resources is generally assessed by whether a site has yielded, or may be likely to yield, information important in prehistory or history. This is typically related to the integrity of, or lack of disturbance to, its archaeological materials and features. Generally, the setting of archaeological resources typically is not a character-defining feature that contributes to the significance of archaeological resources. Therefore, new landscape features that would result from future wind energy development projects located offshore of New York State may change the views, viewsheds, or settings of onshore (terrestrial) archaeological resources, but such a change would not be expected to affect the significance of these archaeological resources.

New York's Atlantic seaboard is associated with broad historical events and patterns of development: a lengthy history of presence, settlement, and use by indigenous nations for thousands of years; early colonial settlement; early industrialization, urbanization, and agricultural development from the mid-18th through mid-19th centuries; agricultural, industrial, immigration, commercial, and urban expansion from the mid-19th century to the end of World War I; and the development of suburbs from 1840 to 1960. Within these broader themes and patterns, the history of the south shore of Long Island is associated with indigenous nations, including the history of the federally recognized Shinnecock Indian Nation and the state-recognized Unkechaug Nation of the Poospatuck Reservation; the melding of various traditions and practices of various European groups that came to the East End of the south shore; the rise and fall of various maritime industries; localized industrialization; summer resort and summer vacation home development; and the rise of modern industries, such as defense weaponry manufacture and aeronautics design and development. The onshore (terrestrial) cultural resources within the onshore portion of the AoA will reflect this cultural context.

2.2.2.1 Architectural or Other Built Resources

The data and literature review for architectural or other built resources indicated that the onshore portion of the AoA has not undergone a comprehensive investigation to identify historic architectural or other built resources. However, three building surveys have been conducted at specific locations on Long Island within the onshore portion of the AoA: a 2013 building survey at Fort Tilden, in the New York City Borough of Queens, to support the Fort Tilden Historic District boundary increase; a historic resources survey of the village of Quogue, in Suffolk County, and a survey to update the historic

resources of the village of Lawrence, in Nassau County. Additionally, since 2004, the New York SHPO has conducted reviews for at least 348 projects at various locations within the onshore portion of the AoA to consider the effects of those project on historic properties. The majority of these reviews appear to have considered the effects of those projects on historic properties that are architectural or other built resources (OPRHP 2017c).

A review of the databases maintained by OPRHP and NPS indicated that a total of 2,801 historic architectural or other built resources are located within the onshore portion of the AoA. Of these, 1,722 architectural or other built resources have been previously evaluated for State or National Register eligibility: 652 are listed in the State or National Register; 223 have been determined eligible for listing in the State or National Register; and 847 have been determined not eligible for listing in the State or National Register. The eligibility of the remaining 1,079 historic architectural or other built resources for the State or National Register is undetermined (OPRHP 2017c).

The historic architectural or other built resources identified within the onshore portion of the AoA include residential homes and cottages, lighthouses, windmills, commercial and government properties, churches, military structures, radar sites, industrial sites, bridges, canals, piers, and seawalls, as well as other types of built resources. Collectively, they represent a broad spectrum of New York's history and area associated with the themes of military activities, residential development, transportation, recreation, and maritime infrastructure.

OPRHP's CRIS database provides specific information regarding NRHP-listed historic properties (it does not provide specific information regarding NRHP-eligible historic properties). Based on this information, a total of 43 NRHP-listed historic properties, comprised of individual properties and historic districts, are located within the onshore portion of the AoA (see Table 4). One of these NRHP-listed historic properties, the Montauk Point Lighthouse, has also been designated an NHL (NPS 2017c). The OPRHP database does not indicate the National Register criteria under which NRHP-listed (or NRHP-eligible) historic properties were determined significant. Additionally, this database does not indicate whether views, viewsheds, and/or setting are character-defining features that contribute to the significance of these historic properties.

However, BOEM has conducted studies to help guide the evaluation of visual impacts on visually sensitive areas, which could include those historic properties for which views, viewsheds, and/or setting are character-defining features that contribute to their historic significance (Klein et al. 2012a, 2012b; URS Group, Inc. and Truescape 2015). Correlating the information in these documents with the NRHP-listed historic properties in Table 5 indicates that at least 18 NRHP-listed historic properties have a maritime setting that includes views of the Atlantic Ocean and areas within which future wind energy development projects located offshore of New York State would be constructed. Twelve of these properties are NRHP-listed historic districts (Fort Tilden, Jacob Riis Park, Quogue, Sagaponack, Fire Island Lighthouse, Far Rockaway Historic Bungalow, Jones Beach State Park, Southampton Village, Beach Road, Wickapogue Road, East Hampton, and Montauk Association Historic Districts) and six are individual NRHP-listed properties (the Felix House, Granada Towers, Fire Island Light Station, Quogue Life Saving Station, the Dr. Wesley Bowers House, and the Montauk Point Lighthouse). It is likely that additional NRHP-listed and -eligible historic properties may also have a maritime setting that includes views of the Atlantic Ocean, depending on their location, historic context, and character-defining features.

Table 4. NRHP-Listed Historic Properties within the Onshore Portion of the AoA

Source: OPRHP 2017c; NPS 2017c.

Resource Name	NRHP Number	County	NYC Borough/Town
Far Rockaway Beach Bungalow Historic District	12NR06370	Queens	Queens
Fort Tilden Historic District	90NR01571	Queens	Queens
Riis, Jacob, Park Historic District	90NR01579	Queens	Queens
Rockaway Courthouse	13NR06492	Queens	Rockaway Beach
Temple of Israel Synagogue	13NR06491	Queens	Rockaway Beach
Cobble Villa	14NR06602	Nassau	Long Beach
Felix, Pauline, House	04NR05378	Nassau	Long Beach
Granada Towers	90NR01715	Nassau	Long Beach
House at 226 West Penn (Long Beach Historical Museum)	08NR05887	Nassau	Long Beach
Jones Beach State Park, Causeway and Parkway System	04NR05404	Nassau	Towns of Hempstead and Oyster Bay
United States Post Office, Long Beach	90NR01716	Nassau	Long Beach
Samuel Vaisberg House	04NR05380	Nassau	Long Beach
AN/FPS-35 Radar Antenna and Tower	01NR01849	Suffolk	Montauk
Balcastle	90NR01914	Suffolk	Southampton

Table notes are on the next page.

Table 4 continued.

Resource Name	NRHP Number	County	NYC Borough/Town
Beach Road Historic District	90NR01915	Suffolk	Southampton
Dr. Wesley Bowers House	90NR01916	Suffolk	Southampton
Briar Patch Road Historic District	90NR01934	Suffolk	East Hampton
Carrington House	12NR06405	Suffolk	Brookhaven (Fire Island)
Cherry Grove Community House and Theatre	13NR06425	Suffolk	Cherry Grove
Crowther House	90NR01942	Suffolk	Westhampton Beach
East Hampton Village District	90NR01930	Suffolk	East Hampton
East Hampton Village Historic District (Boundary Increase)	90NR01933	Suffolk	East Hampton
Egypt Lane Historic District	90NR01936	Suffolk	East Hampton
Fire Island Light Historic District (Boundary Increase)	09NR06051	Suffolk	Fire Island
Fire Island Light Station	90NR01872	Suffolk	Fire Island
William Floyd Estate (Old Mastic House)	90NR01772	Suffolk	Mastic
Hayground Windmill	90NR01931	Suffolk	East Hampton
Jones Road Historic District	90NR01938	Suffolk	East Hampton
Miss Amelia's Cottage	92NR00415	Suffolk	Amagansett
Montauk Association Historic District	90NR01787	Suffolk	Montauk
Montauk Point Lighthouse ^a	90NR01786	Suffolk	East Hampton
Thomas Moran House	90NR01929	Suffolk	East Hampton
Pleasants House	90NR01791	Suffolk	Amagansett
Quogue Cemetery	13NR06463	Suffolk	Quogue
Quogue Historic District	15NR00027	Suffolk	Quogue
Quogue Life-Saving Station	99NR01441	Suffolk	Quogue
Sagaponack Historic District	95NR00861	Suffolk	Sagaponack
Saint Thomas' Chapel	97NR01140	Suffolk	Amagansett
Southampton Village Historic District	90NR01920	Suffolk	Southampton
Southampton Village Historic District Expansion (Lewis St. H.D.)	92NR00384	Suffolk	Southampton
Thomas Strong House	04NR05322	Suffolk	Wainscott
Wainscott Windmill	90NR01789	Suffolk	East Hampton
Wickapogue Road Historic District	90NR01919	Suffolk	Southampton

Notes:

^a National Historic Landmark

2.2.2.2 Landscapes and Seascapes

According to NPS guidance for identifying and documenting rural historic landscapes, landscapes are “a geographical area that historically has been used by people, or shaped or modified by human activity, occupancy, or intervention, and that possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and natural features” (McClelland et al. 1999). While not expressly referenced, it is reasonable to expect that such landscapes could include seascapes, and the term “historically” would be applied to landscapes associated with, or recognized by, any group of people, including indigenous nations.

The data and literature review conducted for this Study did not identify any previously recorded landscapes or seascapes, including those that would be indigenous, historic, or cultural landscapes or seascapes, within the onshore portion of the AoA. Additionally, the data and literature review did not indicate whether areas within the AoA have ever been evaluated to determine whether such landscapes or seascapes are present.

2.2.3 Traditional Cultural Properties

According to NPS guidance for identifying, documenting, and evaluating TCPs, a TCP consists of “a property that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that are rooted in that community’s history, and are important in maintaining the continuing cultural identity of the community” (McClelland et al. 1999). TCPs are generally defined by members of any community that recognizes them, as these resources are directly tied to their history and importance to maintaining cultural identity. While TCPs can be associated with any members of a living community, they are most often identified by, and associated with, indigenous nations (McClelland et al. 1999).

With regard to NRHP-eligible TCPs associated with indigenous nations, eligibility is usually based on the properties’ “associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community” and “are rooted in a traditional community’s history and are important in maintaining the continuing cultural identity of the community.” Additionally, “while the beliefs or practices associated with a TCP are of central importance, the NRHP does not include intangible resources. The TCP must be a physical property or place – that is, a district, site,

building, structure, or object” (NPS 2012). While historical TCPs may be documented in the form of published literature or through ethnographic or archaeological analyses, information on indigenous TCPs tends to be passed down by word of mouth or by ritualistic events (McClelland et al. 1999). Additionally, the identification and evaluation of indigenous TCPs for NRHP eligibility can be difficult because indigenous nations may consider such information confidential and limited to tribal members (Ball et. al 2015).

The data and literature review conducted for this Study did not identify any previously recorded TCPs, including those that would be associated with indigenous, historic, or living groups of people within the AoA. Additionally, the data and literature review did not indicate whether areas within the AoA have ever been evaluated to determine whether TCPs were present.

As part of the State of New York’s master planning effort for future offshore wind energy development, a letter dated April 7, 2017, was sent to 30 representatives of indigenous nations, inviting them to assist with, and participate in, this process. Follow-up letters to representatives of indigenous nations who had not responded to the original letter were submitted on May 8, 2017. To date, the federally recognized Delaware Tribe of Indians has responded with interest to assist and participate in consultation relating to future offshore wind development projects. Additionally, the federally recognized Shinnecock Indian Nation has an interest in future wind energy development projects located offshore of New York State and has reviewed and commented on this Study. No other responses to either letter have been received.

Separately, a total of 12 indigenous nations (eleven federally recognized Indian tribes and one state-recognized Indian tribe) were identified as having ancestral and historical ties to lands within New York State and/or portions of the OCS that are included in the AoA (see Table 5). Nine of these indigenous nations are located in New York State, including eight federally recognized Indian tribes and one state-recognized Indian tribe. Two of the indigenous nations located in New York State have reservation lands on Long Island: the federally recognized Shinnecock Indian Nation and the state-recognized Unkechaug Nation of the Poospatuck Reservation. The remaining three federally recognized Indian tribes are located outside of New York State. As part of compliance with Section 106 of the NHPA, BOEM will consult with indigenous nations over the course of its review of future offshore wind development projects.

Therefore, it is likely that surveys for TCPs, conducted in coordination with archaeological and architectural surveys and visual modelling and visual simulations, should be included in cultural resources investigations for future wind energy development projects located offshore of New York State. The purpose of these coordinated TCP surveys would be to identify NRHP-listed or -eligible TCPs that may be impacted or affected by such projects.

BOEM has worked with indigenous nations to develop guidance for addressing indigenous concerns regarding the potential impacts of offshore energy development on traditional resources and treaty rights; archaeological and architectural resources; visually sensitive areas, including views within and to/from landscapes or seascapes; terrestrial and marine habitats; changes to ambient noise levels; socioeconomic conditions; and cumulative impacts that may occur because of several simultaneous or consecutive projects (Ball et. al 2015; see Section 4). It is expected that TCP surveys would be developed in consideration of federal guidance for TCPs and as an outcome of BOEM’s Section 106 consultation and review process, as stipulated in BOEM’s 2016 PA. Additionally, it is expected that the evaluation of impacts and effects of future wind energy development projects located offshore of New York State would be considered in terms of the cultural and historic context, contributing resources, and setting of any identified TCPs and in terms of the beliefs and customs of the constituencies that value any identified TCPs.

Table 5. Indigenous Nations with a Potential Interest in Future Wind Energy Development Projects Located Offshore of New York State

Source: OPRHP 2016; NPS 2017d, 2017e, 2017f; U.S. Department of Housing and Urban Development 2017; Thomson Reuters 2017

Tribal Name	Federal or State Recognition	Located in New York State	Potential Interest in the AoA for this Study
Cayuga Nation	Federal and State	Yes	Historical or ancestral interest in lands in New York State
Delaware Nation, Oklahoma	Federal	No (Oklahoma)	Historical or ancestral interest in lands in New York State, including Richmond, Kings, Queens, and Nassau counties, and/or the OCS
Delaware Tribe of Indians	Federal	No (Oklahoma)	Historical or ancestral interest in lands in New York State, including Kings, Queens, and Nassau counties, and/or the OCS
Oneida Nation of New York	Federal and State	Yes	Historical or ancestral interest in lands in New York State
Onondaga Nation	Federal and State	Yes	Historical or ancestral interest in lands in New York State

Table 5 continued

Tonawanda Band of Seneca	Federal and State	Yes	Historical or ancestral interest in lands in New York State
Seneca Nation of Indians	Federal and State	Yes	Historical or ancestral interest in lands in New York State
Shinnecock Indian Nation	Federal and State	Yes	Historical or ancestral interest in lands in New York State, including Richmond, Kings, Queens, Nassau, and Suffolk counties, and/or the OCS
Saint Regis Mohawk Tribe	Federal and State	Yes	Historical or ancestral interest in lands in New York State
Stockbridge-Munsee Community, Wisconsin	Federal	No (Wisconsin)	Historical or ancestral interest in lands in New York State, including Queens and Nassau counties, and/or the OCS
Tuscarora Nation	Federal and State	Yes	Historical or ancestral interest in lands in New York State
Unkechaug Indian Nation of the Poospatuck Reservation	State	Yes	Historical or ancestral interest in lands in New York State and/or the OCS

3 Sensitivity and Risk

This section describes the relative sensitivity of the AoA with regard to the presence of cultural resources and historic properties, as well as the risk that construction and operation of future wind energy development projects located offshore of New York State may result in impacts on cultural resources or effects on historic properties. As discussed above in Section 1.1, the AoA for this Study consists of an offshore portion and an onshore portion.

The information presented above in Section 2.2 suggests that there is the potential for additional previously unidentified cultural resources and historic properties to be identified within the AoA, as discussed below in Section 3.1, and that wind energy projects offshore of New York State have the potential to impact or affect cultural resources and historic properties, as discussed below in Section 3.2. Future developers of wind energy projects offshore of New York State, including lessees or grantees, should expect that various cultural resources investigations, including underwater and onshore cultural resources investigations, will be necessary to consider the potential impacts and effects on cultural resources and historic properties, as discussed below in Section 3.2. Such investigations would be conducted to (1) identify historic properties and cultural resources in the APE and, if necessary, evaluate identified cultural resources for NRHP eligibility; (2) assess potential impacts on cultural resources and effects on historic properties; and (3) provide recommended measures to avoid, minimize, or mitigate adverse impacts on cultural resources and adverse effects on historic properties.

The actual scope and level of effort for such cultural resources investigations will be determined by BOEM in accordance with BOEM's 2016 PA (see Appendix A), as discussed below in Section 4.1. The cultural resources investigations may consist of underwater archaeological investigations and architectural surveys; onshore (terrestrial) architectural surveys; landscape and/or seascape surveys; and surveys to identify TCPs. While it is expected that such cultural resources investigations would generally follow federal, state, and tribal guidance, as applicable, BOEM's 2016 PA indicates that these investigations would be developed and implemented in consultation with a number of Section 106 consulting parties, including, but not limited to, BOEM, the New York SHPO, federally recognized Indian tribes, and other parties to the Section 106 compliance process. Additionally, it is expected that some cultural resources investigations, such as onshore architectural surveys, landscape and seascape surveys, and surveys for traditional cultural properties, may also require coordination with other studies, such as viewshed modelling and visual simulations.

3.1 Sensitivity Assessment

As discussed in Section 2.2.1, the offshore portion of the AoA should be considered sensitive for the presence of submerged (underwater) cultural resources, including submerged indigenous archaeological sites, shipwrecks and other obstructions, and submerged architectural or built resources. While no previously identified and recorded submerged indigenous archaeological sites are located within the offshore AoA, the data and literature review suggests that such sites have the potential to be present. Additionally, the data and literature review indicate that previously identified and recorded shipwrecks and other obstructions and submerged built resources are located within the AoA.

3.1.1 Sensitivity Assessment for the Offshore Portion of the AoA

Based on the information obtained as part of the data and literature review, the offshore portion of the AoA should be considered sensitive for containing previously unidentified submerged landforms that may have the potential to be archaeologically sensitive. Additionally, the offshore portion of the AoA should be considered sensitive for containing previously identified and recorded shipwrecks and other wrecks (planes and the collapsed Texas Tower 4) and submerged built resources, as well as for previously unidentified and unrecorded shipwrecks, other wrecks, and other submerged built resources.

3.1.1.1 Submerged Indigenous Archaeological Sites

In the past several years, archaeological investigations have identified increasing evidence for submerged archaeological sites off the coast of America. As sea levels rose after the Last Glacial Maximum, areas formerly occupied by indigenous peoples were covered with water. Research has begun to conduct detailed explorations to determine where submerged archaeological sites and preserved paleosols that may hold such sites can be found. Information is also being acquired on the conditions of their preservation or non-preservation, and on their significance to indigenous people and archaeological research. While no submerged sites have been found in the OCS, areas to the north and south provide evidence of what submerged paleolandforms with intact paleosols on the portion of the OCS may contain (Merwin 2016a; TRC Environmental Corporation 2012).

In Rhode Island's Narragansett Bay, researchers of the Submerged Paleocultural Landscapes Project have located three terrestrial landscapes preserved in an underwater environment (South Rhode Island.Com 2017). Two of the areas (Cedar Tree Beach and West Beach Road sites) contain artifacts demonstrating indigenous peoples lived or traveled through these locations. The Cedar Tree Beach area has stone tools inundated 6,500–7,000 years ago, while the West Beach Road site contains stone tools and a possible cultural feature under 3 meters of water (South Rhode Island.Com 2017). While these sites are near shore, they demonstrate sea level rise has inundated archaeological sites.

In the 1970s, a scallop fisherman working near the Delmarva Peninsula dredged up the remains of a mastodon and a finely worked bifacial knife from the edge of the continental shelf and 75 meters below the surface. The mastodon was found to be 23,000 years old. Subsequent investigations by the Smithsonian Institution discovered the mastodon was buried in a freshwater peat bog prior to sea level rise. The Smithsonian researchers also believe, based on multiple lines of evidence, that the bifacial knife is associated with the mastodon (Stanford and Bradley 2012). This find is important for two reasons. First, the find is quite a bit older than the Clovis cultural period, generally acknowledged to be the oldest well-documented indigenous cultural period for North America, and second, the location in 75 meters of water off the edge of the continental shelf demonstrates the potential of submerged areas to contain data extremely important to indigenous peoples and archaeological research.

As discussed above in Section 2.2.1.1, no submerged indigenous archaeological sites have been found in the New York Bight area, in which portions of the offshore AoA are located, but research has found sea level curves for New York Harbor that indicate the water level was 28 meters lower 10,000 years ago, 22 meters lower 8,000 years ago and between 12 and 17 meters lower 6,000 years ago (Merwin 2016a). This suggests that the offshore portion of the AoA has the potential for containing submerged landforms that may contain indigenous archaeological sites.

Based on the findings of a study conducted under contract to BOEM in 2012, part of the offshore AoA consists of an area where the probability for intact cultural resources associated with expanding human populations is considered high (TRC Environmental Corporation 2012). As shown on Figure 2, the likelihood that resources associated with early human populations are present within portions of the AoA is based on depth and relevant landforms. Areas of 'no sensitivity' are at a minimum of 120 meters deep. These areas have always been submerged (i.e., were submerged during the Last Glacial Maximum) and

therefore have no potential for containing terrestrial sites. Areas of ‘low sensitivity’ have depths ranging from 70 to 120 meters. These areas were subaerial between the Last Glacial Maximum and Paleoindian period. Therefore, it is possible, but unlikely, that these areas could potentially contain remains of human settlement. Areas of ‘high sensitivity’ have depths ranging from 0 to 70 meters and have been subaerial since the Paleoindian period (TRC Environmental Corporation 2012).

Therefore, while the data and literature review indicate that no previously identified and recorded archaeological sites associated with indigenous people are located within the AoA, this may be due to the lack of professional archaeological surveys in offshore areas rather than a low occurrence of indigenous activity in the area. Numerous terrestrial sites are located adjacent to the AoA that have similar environmental conditions to the portions of the OCS that were above sea level during the Pleistocene and early Holocene periods. Today, despite being beneath the current sea level, topographic features remain on the OCS that are indicative of human habitation and resource procurement. Future geophysical and geotechnical surveys will help identify these topographic features, which, if not destroyed by erosion or displacement by tidal forces, include elevated terraces along ancient lakes, rivers, and streams, as well as possible quarry sites where the materials for stone weapons and tools may have been extracted. If extant, these topographic benchmarks would be considered high probability areas for containing the intact remains of early Native American activity. Such areas would be considered critically important to understanding the peopling of North America and would be exceptionally significant.

In summary

- Submerged paleolandforms with intact paleosols, which could contain submerged indigenous archaeological sites, are extremely likely to exist in the New York Bight from near shore to 70 meters in depth, including approximately half of the offshore portion of the AoA (see Figure 2).
- Submerged indigenous archaeological sites are likely to be located on topographic features similar to those where onshore sites are found. These features include terraces of rivers and streams, ridgetops, former estuary margins, and areas once near the shore line. Landforms associated with and adjacent to the Hudson Valley Shelf and Hudson Canyon probably contained a high number of sites prior to inundation.
- Any submerged sites are likely to be Paleoindian to Archaic in age (>12,500 to ~6,000 years ago).
- The potential exists for submerged indigenous archaeological sites dating to the pre-Paleoindian period in the submerged areas.
- Any submerged sites and associated paleosols are likely to be very fragile and easily destroyed.

3.1.1.2 Shipwrecks and Other Objects

As discussed in Section 2.2.1.2, the data and literature review indicated that a total of 60 charted and uncharted wrecks, almost entirely vessels, are located across the offshore portion of the AoA (NOAA 2016a, 2016b). Therefore, the offshore AoA should be considered sensitive for containing previously recorded and identified wrecks, as well as for previously unidentified and unrecorded shipwrecks and other objects.

This is not surprising, given that New York's Atlantic seaboard, and particularly the area known as the New York Bight, is associated with broad national historical events and patterns of development: early colonial settlement; early industrialization, urbanization, commercial, and urban expansion from the mid-19th century to the end of World War I; and the development of suburbs from 1840 to 1960 and the rise and fall of maritime industries. Ships and boats of all types and functions have been traversing the waters of the New York Bight since the 17th century and were an integral part of the economy and growth and development of the region and the United States (TRC Environmental Corporation 2012).

In general, watercraft are quite important in terms of archaeological research because they are containers that served a specific purpose. No other type of site consistently produces the range and quality of intact artifacts and raw materials found in wrecks in transit (Gibbins and Adams 2001). In terms of the known shipwrecks located within the offshore portion of the AoA, the dates for confirmed wrecks are limited to the 20th century, with the majority occurring in World War I and World War II. These wrecks are dominated by a variety of cargo vessels carrying construction materials, consumer goods, and fuel. While wrecks from earlier periods may be present, none have been previously identified and recorded (NOAA 2016a, 2016b).

With regard to the information regarding previously identified and recorded shipwrecks in the offshore portion of the AoA, 14 shipwrecks were the result of being torpedoed by German submarines during World War I and World War II, as discussed above in Section 2.2.1.2. This suggests that, in particular, these shipwrecks have the potential to illuminate information relative to international maritime warfare activities offshore New York and New Jersey. In both world wars, the Germans were very concerned about the United States supplying their allies in Europe and made a concerted effort to disrupt the shipping of troops, goods, and fuel to the greatest extent possible. As such, German U-boats roamed the eastern coast of the United States during both world wars and did great damage to vessels, particularly to cargo

ships, of which 13 were sunk by German submarines in the two wars. Additionally, as discussed above in Section 2.2.1.2, the offshore portion of the AoA was the location of an infamous event known as “Black Sunday” in World War I, when, on June 2, 1918, five cargo vessels and one ship that served as a passenger and cargo ship were torpedoed and sank by German U-boat 151, along with two other ships that were attacked and damaged but did not sink (Prendergast 2002). The approximate locations of the six ships that were sunk on Black Sunday are in the western portion of the AoA.

In addition to shipwrecks, at least one other wreck in the offshore portion of the AoA, Texas Tower 4, has the potential to illuminate a dominant theme in the nation’s history: the Cold War. As discussed above in Section 2.2.1.2, the New York area was used for missile detection during the Cold War (1945-1989). As part of the effort to fortify the Distant Early Warning System established in the 1950s in response to the Soviet Union’s development of nuclear weapon technology, five radar installations were proposed for the area off the eastern coast of the United States. These installations were known as “Texas Towers” for their design based on offshore oil platforms in the Gulf of Mexico. Texas Tower 4 was located in the offshore portion of the AoA, constructed from 1957-1958 and in operation until 1961, when it collapsed in 1961 during a severe winter storm. A total of 28 people were lost as a result of the collapse, including 14 U.S. Air Force personnel and 14 repair staff. Because only two bodies were recovered, it is possible that human remains are present at the site of the collapse. The collapse of the tower was a national news story and led to a court martial and a congressional hearing (Ray 1965; Jin et al. 2002; NORAD 2013; Aqua Explorers 2017). As such, Texas Tower 4 and its associated barge are the material remains of an important event in Cold War history.

In summary:

- The known shipwrecks in the offshore portion of the AoA can be used to study economic and commercial patterns of the first half of the 20th century and how the two world wars affected these patterns.
- The wrecks may contain information about the engineering and design aspects of different types of watercraft.
- All of the wrecks are probably in fragile condition. Lying on the ocean floor for many years and suffering the damage that caused the wreck have likely degraded the ships and their contents.
- It is possible some of the wrecks contain human remains.
- With regard to wrecks caused by German submarines, each of these wrecks can be used to study aspects of submarine warfare during the two world wars.
- “Black Sunday” is an important historical event in World War I and the wrecks represent the material evidence of the event, as well as being of importance to veteran’s groups and families of the ships’ crew and passengers.

- With regard to Texas Tower 4, Towers 1 and 5 were never constructed and Towers 2 and 3 were dismantled after the collapse of Tower 4. Therefore, the remains of Tower 4 may be the only existing remnants of this type of installation developed as part of the Distant Early Warning System during the Cold War.

3.1.1.3 Submerged Architectural or Built Resources

As discussed in Section 2.2.1.3, the data and literature review indicated that at least eight early 20th century transatlantic telegraph cables have the potential to be located in the offshore portion of the AoA, although their exact locations and degree of integrity are unknown (Burns 2016; Huudemann 2003). Additional underwater pipelines and cables are also located within the offshore portion of the AoA (NOAA 2017a-e). Therefore, the offshore AoA should be considered sensitive for containing submerged (underwater) built resources related to telecommunications and energy transmission.

In summary:

- The exact paths of early 20th century telecommunications cables that likely pass through the AoA are unknown.
- The conditions of early 20th century telecommunications cables are unknown, although it is likely that the cables have deteriorated and/or may have been severed during the world wars.
- The location and condition of the first transatlantic cable from Europe to New York is unknown. This is likely a resource that is significant in the field of communication, as it represents a major step in connecting the New York area with Europe via a direct connection.
- Cable technology has changed over time, and cables in the AoA could be used to document the change.

3.1.2 Sensitivity Assessment for the Onshore Portion of the AoA

Based on the information obtained as part of the data and literature review, the onshore portion of the AoA should be considered sensitive for containing previously identified and recorded historic architectural and other built resources, including those that are NRHP listed or eligible, as well as for previously unidentified and unrecorded historic architectural and other built resources that may be NRHP eligible. Additionally, the onshore portion of the AoA should be considered sensitive for containing previously unidentified landscapes and seascapes that may have the potential to be NRHP eligible.

3.1.2.1 Architectural or Other Built Resources

As discussed in Section 2.2.2.1, the data and literature review indicate that at least 2,801 previously identified and recorded historic architectural or other built resources are located within the onshore AoA, including 875 architectural or other built resources that have been listed in, or determined eligible for listing in the State and/or National Registers, of which at least 43 architectural resources are NRHP-listed and one is also designated as an NHL (OPRHP 2017c; NPS 2017c). Therefore, the onshore AoA should be considered sensitive for containing previously identified and recorded historic architectural or other built resources that are NRHP listed or eligible, as well as for containing previously unidentified and unrecorded historic architectural or other built resources that may be NRHP eligible.

This is not surprising, given that New York's Atlantic seaboard is associated with broad historical events and patterns of development: a lengthy history of presence, settlement, and use by indigenous nations for thousands of years; early colonial settlement; early industrialization, urbanization, and agricultural development from the mid-18th through mid-19th centuries; agricultural, industrial, immigration, commercial, and urban expansion from the mid-19th century to the end of World War I; and the development of suburbs from 1840 to 1960. Additionally, within these broader themes and patterns, the history of the south shore of Long Island is associated with indigenous nations, including the history of the federally recognized Shinnecock Indian Nation and the state-recognized Unkechaug Nation of the Poospatuck Reservation; the melding of various traditions and practices of various European groups that came to the East End of the south shore; the rise and fall of various maritime industries; localized industrialization; summer resort and summer vacation home development; and the rise of modern industries, such as defense weaponry manufacture and aeronautics design and development.

However, the significance of maritime views, viewsheds, and settings to previously identified and recorded architectural or other built resources, and previously unidentified and unrecorded resources, including those that are or may be NRHP eligible, is critical to understanding the sensitivity of the onshore portion of the AoA. For example, while the State and federal databases examined as part of the data and literature review did not specify the National Register criteria under which these architectural or other built resources were previously determined NRHP eligible and did not specify whether views, viewsheds, or setting were character-defining features that contributed to their historic significance, at least 18 of the 43 NRHP-listed historic properties have a maritime setting that includes views of the Atlantic Ocean and areas within which future wind energy development projects located offshore of New York State would be constructed.

In summary:

- The significance of maritime views, viewshed, and settings is critical to understanding the sensitivity of architectural and other built resources within the onshore portion of the AoA.
- The contribution of maritime views, viewsheds, and settings to the NRHP eligibility of specific architectural or other built resources, including those that have already been determined to be NRHP eligible, is unknown for the majority of previously identified and architectural or other built resources.
- The contribution of maritime views, viewsheds, and settings to the historic significance of architectural or other built resources may represent a research framework that should be considered and applied as part of the methodology for conducting architectural surveys for previously unidentified and unrecorded architectural or other built resources, in coordination with visual modelling and visual simulations, that would be conducted as part of cultural resources investigations.

3.1.2.2 Landscapes or Seascapes

As discussed in Section 2.2.2.2, the data and literature review indicate that no previously identified and recorded landscapes or seascapes, including those that would be indigenous, historic, or cultural landscapes or seascapes, are located within the onshore AoA. However, the State and federal databases examined as part of the data and literature review indicated that at least 18 of the 43 NRHP-listed historic properties have a maritime setting that includes views of the Atlantic Ocean and areas within which future wind energy development projects located offshore of New York State would be constructed. This suggests that maritime views, viewsheds, and settings within the onshore portion of the AoA for this Study are discernible and can be defined with reference to NRHP-eligibility evaluations.

Therefore, given the historical events, patterns, and themes associated with New York's Atlantic seaboard, and particularly the south shore of Long Island and the New York Bight, as summarized above in Sections 3.1.1.1 and 3.1.2.1, the onshore AoA should be considered sensitive for containing one or more previously unidentified and unrecorded landscapes or seascapes that may be NRHP eligible. This sensitivity would apply to the potential for indigenous, historic, or cultural landscapes or seascapes associated with indigenous nations as well as with historic Euro-American settlement and use.

In summary:

- The presence or absence of indigenous, historic, or cultural landscapes or seascapes within the onshore AoA is unknown, but, given the broad events, patterns, and themes of the onshore AoA, it should be considered sensitive for containing such landscapes or seascapes.
- The need to consider indigenous, historic, or cultural landscapes or seascapes as part of cultural resources investigations may represent a research framework that should be considered and applied as part of the methodology for conducting landscape and/or seascape surveys for previously unidentified and unrecorded landscapes or seascapes, in coordination with visual modelling and visual simulations.

3.1.3 Sensitivity Assessment for Traditional Cultural Properties in the AoA

As discussed above in Section 2.2.3, the data and literature review conducted for this Study did not identify any previously recorded TCPs, including those that would be associated with indigenous, historic, or living groups of people within the AoA. Additionally, the data and literature review did not indicate whether areas within the AoA have ever been evaluated to determine whether TCPs are present.

However, given the length of indigenous and Euro-American presence, settlement, and use of the onshore and offshore portions of the AoA, and given the presence of two indigenous nations on Long Island, the federally recognized Shinnecock Indian Nation and the state-recognized Unkechaug Nation of the Poospatuck Reservation, it is possible that TCPs may be associated with the AoA and that such TCPs may be significant when evaluated against National Register criteria.

In summary:

- The presence or absence of TCPs within the AoA, including both the offshore and onshore portions, is unknown; however, given the broad events, patterns, and themes of the onshore AoA, it should be considered sensitive for containing TCPs, particularly those that are identified by indigenous nations.
- The need to consider TCPs represents a research framework that should be developed and applied as part of conducting cultural resources investigations for future wind energy development projects located offshore of New York State, and this may require coordination with specific indigenous nations or with other groups, as well as coordination with surveys for other cultural resources in submerged (underwater) and onshore (terrestrial) locations and with visual modelling and visual simulations.

3.2 Risk Assessment

The siting, construction, and operation of offshore wind farms can impact cultural resources depending on the locations of infrastructure for offshore wind farms relative to cultural resources. Such impacts typically consist of the following:

- Physical impacts on submerged landforms that have the potential to contain archaeological resources and identified submerged cultural resources, such as submerged archaeological sites, shipwrecks and other objects, underwater built resources, seascapes, and TCPs, including those submerged cultural resources that are historic properties. These impacts can potentially result from vessel collisions, deflation of the supporting seabed from propeller wash, and inadvertent removal of cultural remains from historical context during construction of wind turbines and electric service platforms, as well as during the laying of inter-array cables and export cables.
- Visual impacts on the views, viewsheds, and/or settings of onshore (terrestrial) architectural or other built resources, landscapes and seascapes, and TCPs that are historic properties, where they are character-defining features that contribute to the significance of a historic property. These impacts can potentially result from the introduction of new and visible landscape features that are inconsistent with the existing views, viewsheds, and/or settings of such historic properties.

As discussed in Section 2.2.1, the offshore portion of the AoA should be considered sensitive for the presence of submerged (underwater) cultural resources, including submerged indigenous archaeological sites, shipwrecks and other obstructions, and submerged architectural or built resources. Similarly, as discussed in Section 2.2.2, the onshore portion of the AoA should be considered sensitive for the presence of onshore (terrestrial) cultural resources, including architectural or other built resources and landscapes or seascapes. Finally, as discussed in Section 2.2.3, the overall AoA, including the offshore and onshore portions, should be considered sensitive for the presence of TCPs, particularly those that may be associated with indigenous nations. As discussed in Section 1.3.1.1, all of these types of cultural resources have the potential to meet National Register eligibility criteria, and if determined to be NRHP eligible, would be considered historic properties.

As discussed in Section 1.3.1.1, Section 106 of the NHPA is the regulatory framework under which cultural resources and historic properties will be identified and evaluated and under which the assessment of the effects on historic properties will be conducted for future wind energy development projects located offshore of New York State. As discussed in Section 1.3.1.2, BOEM's 2016 PA has established the processes for identifying historic properties within the APEs for such projects, assessing the projects' effects on historic properties, and resolving any adverse

effects on historic properties from activities associated with construction or operation of such projects, in accordance with Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800.

For the purposes of this risk assessment, and in accordance with the terms of BOEM's 2016 PA, the impacts of leasing, constructing, and operating future wind energy development projects offshore of New York State are considered in terms of their potential effects on historic properties. Specifically, NRHP-listed or -eligible historic properties that are identified as part of such projects would be considered by BOEM as part of its Section 106 review of the projects in accordance with BOEM's 2016 PA, as discussed in Sections 1.3.1.2 and 4.1.1. It is expected that the impacts of such actions on those cultural resources that are not determined to be NRHP eligible, which may include indigenous resources that do not meet NRHP-eligibility criteria, would be considered as part of NEPA compliance for future wind energy development projects located offshore of New York State.

Future wind energy development projects located offshore of New York State will have the potential to impact cultural resources or affect historic properties. These impacts could result from the leasing of areas of the OCS for such projects or by constructing and operating such projects. These impacts are discussed in greater detail below.

3.2.1 Leasing

Leasing activities have the potential to result in a finding of adverse effects on historic properties through the lease of [a historic] property out of federal control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance (36 CFR 800.5(a)(2)(vii)). Conceptually, while the effects of issuing a lease on a historic property would appear to be indirect, such an action could result in an adverse effect on historic properties.

BOEM's 2016 PA acknowledges that "the issuance of a commercial lease, limited lease, ROW grant, or RUE grant has the potential to affect historic properties insofar as it may lead to the lessee or grantee conducting geophysical survey and geotechnical testing; that geophysical survey is not likely to have the potential to affect historic properties; but that the issuance of a research lease or approval of a Plan has the potential to affect historic properties insofar as it may lead to the lessee conducting geotechnical testing, construction and operating site assessment facilities and renewable energy structures, and placing and operating transmission cables, pipelines, and/or associated facilities that involve the transportation or transmission of electricity or other energy products from renewable energy projects" (BOEM 2016a). For example, issuing a lease could result in physical destruction of or damage to all or part of the

property; changes to the character of the property's use or the physical features within the property's setting that contribute to its historic significance; or the introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features. All of these effects would be considered an adverse effect on a historic property (ACHP 2004).

To address the potential effects of issuing a lease for future wind energy development projects offshore of New York State in an area of the OCS that may contain historic properties, BOEM will implement Stipulation I of BOEM's 2016 PA (see Appendix A). Through the implementation of Stipulation I, BOEM will require future lessees and grantees to avoid effects on historic properties through lease stipulations such that BOEM can make a "finding of no historic properties affected." In the event that lessees and grantees cannot avoid effects on historic properties through lease stipulations, BOEM will follow 36 CFR §800.5 to determine whether the effects will be adverse and will resolve any adverse effects by following 36 CFR §800.6 and 36 CFR §800.10 for NHLs (BOEM 2016a).

3.2.2 Construction

Construction activities also have the potential to result in a finding of adverse effects on historic properties. As noted above for leasing, BOEM's 2016 PA acknowledges that "the issuance of a research lease or approval of a Plan has the potential to affect historic properties insofar as it may lead to the lessee conducting geotechnical testing, constructing site assessment facilities and renewable energy structures, and placing transmission cables, pipelines, and/or associated facilities that involve the transportation or transmission of electricity or other energy products from renewable energy projects" (BOEM 2016a).

For example, constructing renewable energy structures and placing and operating transmission cables, pipelines, and/or associated facilities that involve the transportation or transmission of electricity or other energy products from renewable energy projects have the potential to affect historic properties through (1) the physical destruction of or damage to all or part of a historic property; (2) changing the character of the historic property's use or the physical features within the historic property's setting that contribute to its historic significance; or (3) introducing visual, atmospheric, or audible elements that diminish the integrity of the historic property's significant historic features. All of these effects would be considered an adverse effect on a historic property (ACHP 2004).

Conceptually, the physical destruction of or damage to all or part of a historic property during construction typically occurs through ground-disturbing activities, including those that occur on or in the seafloor, and is typically considered an impact that would affect a historic property. Submerged archaeological sites, shipwrecks and other objects, and underwater built resources are the types of historic properties that would be affected by construction activities. However, if the character-defining features of a historic property that was a seascape or TCP included the seafloor and/or included submerged or underwater resources, these types of resources may also be impacted and similarly affected.

Additionally, construction activities can change the character of the historic property's use or the physical features within the historic property's setting that contribute to its historic significance, and construction activities can introduce visual, atmospheric, or audible elements that diminish the integrity of the historic property's significant historic features. Conceptually, these effects may also occur during construction, as well as during pre-construction activities and post-construction/restoration activities, when such activities have temporary visual or audible impacts on the character of the property's use or setting while equipment is present. However, such impacts are typically limited to the construction period and do not result in permanent effects on historic properties. Shipwrecks or other objects and underwater built resources would be the types of submerged (underwater) historic properties that could be affected. Additionally, onshore (terrestrial) architectural or other built resources, landscapes or seascapes, and TCPs that are historic properties also have the potential to be visually or audibly impacted or affected during construction activities, as well as during pre-construction activities and post-construction/restoration activities, but again, such impacts typically are limited to the construction period and do not result in permanent effects on historic properties.

To address the potential effects on historic properties resulting from construction activities for future wind energy development projects located offshore of New York State, BOEM will implement Stipulation II of BOEM's 2016 PA (see Appendix A). Through the implementation of Stipulation II, BOEM will require developers to relocate elements of the proposed project that may affect historic properties, such that BOEM can make a "finding of no historic properties affected." In the event that lessees and grantees cannot avoid effects on historic properties through lease stipulations, BOEM will follow 36 CFR §800.5 to determine whether the effects will be adverse and will resolve any adverse effects by following 36 CFR §800.6 and 36 CFR §800.10 for NHLs (BOEM 2016a).

3.2.3 Operation

Operation activities also have the potential to result in a “finding of adverse effects” on historic properties. As noted above for leasing, BOEM’s 2016 PA acknowledges that “the issuance of a research lease or approval of a Plan has the potential to affect historic properties insofar as it may lead to the lessee operating site assessment facilities and renewable energy structures and operating transmission cables, pipelines, and/or associated facilities that involve the transportation or transmission of electricity or other energy products from renewable energy projects” (BOEM 2016a).

For example, operating offshore renewable energy structures and aboveground associated facilities that involve the transportation or transmission of electricity or other energy products from renewable energy projects has the potential to affect historic properties by changing the character of the historic property’s use or the physical features within the historic property’s setting that contribute to its historic significance, or by introducing visual, atmospheric, or audible elements that diminish the integrity of the historic property’s significant historic features. Both of these effects would be considered an adverse effect on a historic property (ACHP 2004).

Conceptually, changing the character of a historic property’s use or the physical features within a historic property’s setting that contributes to its historic significance, or introducing visual or audible elements that diminish the integrity of a historic properties significant historic features, typically occurs as a result of construction. However, operation activities may similarly affect submerged historic properties and any such changes are typically considered a permanent effect on a historic property. Underwater resources, such as shipwrecks and other objects, or seascapes or TCPs with underwater settings, may be types of historic properties that would be visually affected by operation activities. However, it is more likely that onshore (terrestrial) historic properties would be the type of historic properties that would be visually affected by operation activities, particularly historic properties that are architectural or other built resources, landscapes or seascapes, or TCPs where maritime views, viewsheds, and settings are character-defining features that contribute to their historic significance. Due to the anticipated location of future wind energy development projects offshore of New York State, the potential for audible impacts is low.

To address the potential effects of operation activities on historic properties of future wind energy development projects located offshore of New York State, BOEM will also implement Stipulation II of BOEM’s 2016 PA (see Appendix A). Through the implementation of Stipulation II, BOEM will require developers to relocate elements of the proposed project that may affect historic properties, such

that BOEM can make a “finding of no historic properties affected.” In the event that lessees and grantees cannot avoid effects on historic properties through lease stipulations, BOEM will follow 36 CFR §800.5 to determine whether the effects will be adverse and will resolve any adverse effects by following 36 CFR §800.6 and 36 CFR §800.10 for NHLs (BOEM 2016a).

As indicated above, the risk of impact and effects on historic properties from future wind energy development projects located offshore of New York State will be avoided, minimized, and/or mitigated through implementation of the appropriate measures stipulated in BOEM’s 2016 PA, as well as any requirements that are developed through BOEM’s Section 106 consultation and review processes. Additionally, the application of federal and State guidelines, including those issued by BOEM and OPRHP, as well as the implementation of BMPs by individual lessees, grantees, or developers will further reduce the risk of impacts and effects on historic properties. Federal and state guidelines and BMPs are discussed further in Section 4.

4 Guidelines and Best Management Practices

This section provides a summary of federal and State agency guidelines that will be applicable to the identification of offshore and onshore cultural resources that could be impacted or affected by future wind energy development projects located offshore of New York State, as well as potential BMPs that could be implemented by developers to avoid or minimize potential adverse impacts or effects.

Collectively, the federal and State guidelines, other guidance, and BMPs discussed in this section are intended to assist developers of offshore wind energy development projects in understanding the type of studies that are required to identify cultural resources and historic properties for a project and to assist BOEM with implementing the appropriate processes identified in the Section 106 PA to determine the effects of a project on historic properties, as well as the path forward if adverse effects on historic properties cannot be avoided (BOEM 2016a).

The federal guidelines issued by BOEM that will be applicable to future wind energy development projects located offshore of New York State are discussed in Section 4.1. State guidelines issued by the OPRHP that will be applicable to future wind energy development projects located offshore of New York State are discussed in Section 4.2. Guidelines associated with state permitting or issued by other federal and State agencies or entities, which are typically used to guide cultural resources investigations and NRHP-eligibility evaluations, are discussed in Sections 4.3 and 4.4. These include guidance from such agencies, organizations, or entities as the NPS, the ACHP, the New York State Museum (NYSM), and the New York Archaeological Council. Additionally, potential BMPs that are typically used by developers for the identification and protection of cultural resources in offshore and onshore locations are discussed in Section 4.5.

The guidelines discussed below are subject to revision as determined necessary by the responsible issuing agency, organization, or entity. Existing guidance or regulations may be updated or revised and/or new guidance or regulations may be developed after publication of this Study. Similar to other resource areas, developers should consult federal and state agencies with regulatory jurisdiction or oversight responsibility for specific New York State offshore wind energy development projects to ensure that the appropriate federal and state guidance is being followed. Additionally, the discussion of BMPs in this Study is not intended to be used as a substitute for, or to propose changes to, existing federal and state guidance or to develop new federal or state guidance.

4.1 Federal Guidelines – BOEM

As noted in Section 1.3.1.1, BOEM has regulatory jurisdiction over the OCS and is responsible for considering the potential effects of its actions, including issuing a lease, grant, permit, etc., for a project, on historic properties pursuant to Section 106 of the NHPA (BOEM 2016a). Therefore, BOEM's 2016 PA will serve as the overall guidance for compliance with Section 106 of the NHPA, under which cultural resources investigations that may be necessary to support BOEM's Section 106 review would be conducted, as discussed below in Section 4.1.1.

BOEM's 2016 PA references guidance that should be followed for cultural resources investigations on the OCS. This guidance consists of its *Guidelines for Providing Geological and Geophysical, Hazards, and Archaeological Information Pursuant to 30 CFR Part 585*, and this is the guidance to which the PA refers (BOEM 2016a). However, since the execution of the PA on June 3, 2016, BOEM has revised this guidance to separate the archaeological survey guidelines from the geophysical, geotechnical, and geohazard guidelines, such that there are now two separate guidance documents: BOEM's 2015 *Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR 585* (BOEM 2015), and BOEM's 2017 *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* (BOEM 2017b). BOEM has indicated that this 2017 guidance replaces the earlier July 2015 archaeological guidance, but notes that the now separated guidance documents are still intended to be used in tandem to inform any survey work that a developer proposes to conduct for a project. These two guidance documents are summarized below in Sections 4.1.2 and 4.1.3.

Developers of future wind energy development projects located offshore of New York State, including future lessees or grantees, should expect to support BOEM in the Section 106 review of their proposed activities. Developers should expect such support to consist of conducting the various cultural resources investigations necessary to (1) identify historic properties in a project's APE, including underwater and onshore cultural resources investigations to identify cultural resources in the APE and, if necessary, to evaluate identified cultural resources for NRHP eligibility; (2) assess potential impacts on cultural resources and effects on historic properties; and (3) provide recommended measures to avoid, minimize, or mitigate adverse impacts on cultural resources and adverse effects on historic properties.

Developers should expect that cultural resources investigations may include marine (underwater) surveys to identify underwater archaeological resources, submerged landforms with potential archaeological sensitivity, and/or underwater built resources (underwater structures and other built resources such as cables, artificial reefs, etc.). Developers should expect that onshore cultural resources investigations may include archaeological investigations to identify terrestrial archaeological sites; architectural surveys or inventories to identify onshore built resources (buildings, structures, or other built resources); studies to identify historic or cultural landscapes, including seascapes; and/or studies to identify TCPs.

Additionally, developers should expect that their support will include viewshed modeling to assess the potential visibility of renewable energy structures, such as new offshore wind turbines or new onshore aboveground project-related facilities, within the offshore and onshore viewsheds from which such renewable energy structures would be visible; and visual simulations that depict what new and visible renewable energy structures or aboveground project-related facilities may look like within these existing offshore and onshore viewsheds. BOEM requires project-specific viewshed modelling and visual simulations as part of the Construction and Operations Plan (BOEM 2017c). BOEM's 2016 *Guidelines for Information Requirements for a Renewable Energy Construction and Operations Plan (COP)* provide specific guidance for such viewshed modelling, as discussed in greater detail below in Section 4.1.4. The purpose of such modelling and simulations would be to provide BOEM with information to identify potential impacts on visual resources. This information can also be applied to the evaluation of impacts on cultural resources and effects on historic properties and to identify potential measures to avoid, minimize, or mitigate any potential adverse visual impacts or effects on those historic properties for which viewshed, views, or setting are character-defining features that contribute to their significance as cultural resources or historic properties.

BOEM's 2016 PA separately stipulates the need to consult with potentially affected federally recognized Indian tribes throughout the implementation of the PA on subjects related to the various undertakings covered by the PA, as discussed below in Section 4.1.1 (BOEM 2016a). While the PA does not identify specific guidance for the identification of historic properties of interest or concern to federally recognized Indian tribes, BOEM's Pacific OCS Region has developed guidance for characterizing tribal cultural landscapes that may be applicable to New York's offshore wind energy development project, entitled *A Guidance Document for Characterizing Tribal Cultural Landscapes* (Ball et al. 2015). This guidance document is summarized below in Section 4.1.5.

It is possible that a future developer may be asked to assist with the identification of tribal cultural landscapes or TCPs as part of the identification of historic properties that may be affected by a proposed project or as part of the identification of resources that are of interest or concern to an indigenous nation. Developers should expect that their participation in any identification of resources of interest or concern to indigenous nations would likely be an outcome of BOEM's continued consultation with affected federally recognized Indian tribes under the terms of the PA and/or as an outcome of BOEM's identification of, and consultation with, other consulting parties identified for an undertaking under the terms of the PA.

4.1.1 BOEM's Section 106 Programmatic Agreement

As discussed above in Sections 1.3.1.1 and 1.3.1.2, BOEM executed a PA for the Section 106 review of OCS renewable energy activities offshore of New Jersey and New York on June 3, 2016. This executed PA stipulates the processes that BOEM will follow for its Section 106 review of future wind energy development projects located offshore of New York State to ensure that BOEM has appropriately considered the effects of any such projects on historic properties (see Appendix A).

The Preamble of the PA states that a geophysical survey is not likely to have the potential to affect historic properties. The PA defines geophysical survey as “a marine remote-sensing survey using, but not limited to, such equipment as side-scan sonar, magnetometer, shallow and medium (seismic) penetration subbottom profiler systems, narrow beam or multibeam echo sounder, or other such equipment employed for the purposes of providing data on geological conditions, identifying shallow hazards, identifying archaeological resources, charting bathymetry, and gathering other site characterization information” (BOEM 2016a).

Additionally, Stipulation III of the PA defines other activities that are exempt from Section 106 review because they have little or no potential to affect character-defining features that would contribute to a historic property's NRHP eligibility or significance. These activities include archaeological sampling (vibracoring or other direct sample collection by or under the supervision of a Qualified Marine Archaeologist, for the purposes—at least in part—of historic property identification or NRHP eligibility/testing and evaluation); installation, operation, or removal of meteorological buoys; and construction, installation, operation, or removal of meteorological towers, provided that stipulated conditions are met (BOEM 2016a).

Separately, the Preamble of the PA states that a number of other activities undertaken by a lessee or grantee are likely to have the potential to affect historic properties, including: conducting geotechnical testing (defined in the PA as “the process by which site-specific sediment and underlying geologic data are acquired from the seafloor and the sub-bottom and includes, but is not limited to, such methods as borings, vibracores, and cone penetration tests”); constructing and operating site assessment facilities and renewable energy structures; and placing and operating transmission cables, pipelines, and/or associated facilities that involve the transportation or transmission of electricity or other energy projects (BOEM 2016a).

All of the activities conducted by developers of future wind energy development projects located offshore of New York State to support BOEM for its Section 106 review would be determined as an outcome of BOEM’s consultation with the appropriate SHPO, or THPO if on tribal lands, and other consulting parties to the Section 106 review process, in accordance with the terms of BOEM’s PA. The scope of work and level of effort for these various activities would be determined as an outcome of BOEM’s Section 106 consultation under the terms of BOEM’s PA.

Under Stipulations I and II of the PA, BOEM has (1) provided a definition of the APEs for issuing a commercial lease, limited lease, research lease, ROW grant, or RUE grant and for approving a Plan; (2) defined what constitutes a reasonable and good faith effort to identify historic properties within these APEs; (3) identified how Section 106 consultation will be conducted as part of the definition of the APE and the identification of historic properties; (4) identified how potential NRHP-eligible historic properties will be treated, and where practicable, has noted that to avoid effects on historic properties, they may require lessees and grantees to avoid effects through lease stipulations or by requiring lessees to relocate elements of a proposed project that may affect potential historic properties; and (5) identified the processes that will be followed to assess adverse effects on historic properties, including any historic properties that are designated NHLs, and resolve any adverse effects, if avoidance cannot be achieved (BOEM 2016a).

BOEM’s PA was executed in 2016, a year before BOEM updated its guidance related to the various investigations that may be required of developers to assist BOEM with its Section 106 review for a project’s potential effects on historic properties. Therefore, at the time that BOEM executed its PA, BOEM’s guidance consisted of its *Guidelines for Providing Geological and Geophysical, Hazards, and Archaeological Information Pursuant to 30 CFR Part 585*, and this is the guidance to which the PA refers (BOEM 2016a). However, as discussed above in Section 4.1, BOEM now intends for two

separate guidance documents (BOEM’s 2015 *Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR 585* [BOEM 2015]), and BOEM’s 2017 *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* [BOEM 2017b]) be used in tandem to inform any survey work that a developer proposes to conduct for a project (BOEM 2017b).

Additionally, BOEM has conducted its Section 106 review under the terms of this PA for at least one other New York State offshore wind energy development project, the issuance of a commercial lease (the Statoil “Empire Wind” lease shown on Figure 1) within the New York Wind Energy Area on the OCS offshore of New York, which is located within this Study’s AoA. For this proposed undertaking, BOEM considered the potential effects of issuing this commercial lease on historic properties in accordance with the terms of BOEM’s 2016 PA, and BOEM issued a finding of “no historic properties affected,” with the inclusion of the following elements in the lease:

- The lessee must provide the results of an archaeological survey with its plans.
- The lessee must ensure that the analysis of archaeological survey data collected in support of plan submittal and the preparation of archaeological reports in support of plan submittal are conducted by a qualified marine archaeologist who meets the Secretary of the Interior’s Professional Qualifications Standards (48 FR 44738–44739) and has experience analyzing marine geophysical data.
- The lessee may only conduct geotechnical exploration activities, including geotechnical sampling or other direct sampling or investigation techniques, which are performed in support of plan (i.e., Site Assessment Plans (SAP) and/or COP) submittal, in areas in which an archaeological analysis of the results of geophysical surveys has been completed for that area.
- The qualified marine archaeologist’s analysis of the geophysical data must include a determination of whether any potential archaeological resources are present in the area of geotechnical sampling, including consideration of both indigenous and historic period archaeological resources.
- If any potential archaeological resources are present in the area, the lessee’s geotechnical sampling activities must avoid those resources by a minimum of 164 feet (50 meters). The avoidance distance must be calculated by the qualified marine archaeologist from the maximum discernible extent of the archaeological resource.
- The qualified marine archaeologist must certify in the lessee’s archaeological reports included with a SAP or COP that geotechnical exploration activities did not affect potential historic properties identified as a result of the high-resolution geophysical (HRG) surveys.

In no case may the lessee’s actions affect a potential archaeological resource without BOEM’s prior approval (BOEM 2016b).

4.1.2 BOEM's Guidelines for Cultural Resources Investigations

BOEM issued its March 2017 *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* to provide BOEM's recommendations on effective methods for identifying historic properties, as well as the format for providing this information to BOEM. BOEM developed these guidelines to assist current and prospective lessees, developers, and the archaeologists and other historic preservation professionals working on their behalf with understanding and implementing the appropriate cultural resources investigations for site-specific surveys to identify historic properties that may be impacted by offshore renewable energy activities. BOEM intends for these guidelines to serve as a framework for current and prospective lessees, developers, and the archaeologists and other historic preservation professionals working on their behalf to design historic property identification surveys that will provide BOEM with information sufficient to conduct the necessary review of their projects and to assist BOEM in meeting its obligations under Section 106 of the NHPA and NEPA (BOEM 2017b).

As noted above in Section 4.1, BOEM has indicated that its 2017 *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* (BOEM 2017b) replaces the July 2015 *Guidelines for Providing Geological and Geophysical, Hazards, and Archaeological Information Pursuant to 30 CFR Part 585*. Thus, developers of future wind energy development projects located offshore of New York State should expect to follow the March 2017 guidelines when conducting the necessary cultural resources investigations for their particular project.

BOEM's March 2017 *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* address the identification of historic properties on or within the seabed located on the OCS; the identification of historic properties on or within the seabed located in state submerged lands or within onshore terrestrial areas, or within the viewshed of proposed renewable energy structures; and the identification of historic properties on tribal lands (BOEM 2017b). BOEM's PA explicitly stipulates that its guidelines shall be followed when conducting archaeological investigations to support BOEM's Section 106 review of OCS renewable energy activities such as future wind energy development projects located offshore of New York State.

With regard to BOEM's March 2017 guidelines for the identification of archaeological sites on the OCS, BOEM has determined that there are two broad categories of archaeological sites on the OCS: "historic period sites, such as shipwrecks and associated remains, sunken aircraft, and other maritime infrastructure; and pre-contact period archaeological sites once part of the terrestrial landscape and since inundated by global sea level rise during the late Pleistocene and Holocene. Pre-contact period archaeological resources are those that date to the time before European contact with Native Americans" (BOEM 2017b).

BOEM's March 2017 guidelines further recommend that archaeological survey on the OCS should include both HRG survey techniques and geotechnical testing. Specifically, "the archaeological survey should be designed, with input from a qualified marine archaeologist and specialists in other fields as appropriate (e.g., geology and geomorphology), in a manner that is capable of identifying the site types described in the preceding paragraph. A qualified marine archaeologist meets the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738- 44739) and has experience in conducting HRG surveys and processing and interpreting the resulting data for archaeological potential." Finally, BOEM's March 2017 guidelines provide detailed information for the reporting of archaeological surveys on the OCS (BOEM 2017b).

BOEM's March 2017 guidelines note that the information that a developer gathers during geophysical or geotechnical investigations on the OCS for engineering or siting purposes may also provide information that informs the archaeological sensitivity of a project area, can be used as part of archaeological investigations and/or paleolandscape reconstruction, and greatly informs interpretation of sub-bottom profiler data, even if not explicitly designed to do so. Such geophysical or geotechnical investigations typically include the following:

- HRG survey techniques (such as line spacing, project siting survey, and transmission cable route survey) that should be considered as part of archaeological survey on the OCS.
- Geophysical survey instrumentation, which can be used as part of an archaeological identification survey (such as, gradiometers, side-scan sonar, and sub-bottom profilers).
- Geotechnical investigations for a proposed project that include methods that can be concurrently used for identifying and testing potential archaeological sites, such as direct sampling methods (vibracores, grab samples, and gravity cores, etc.) and laboratory testing.
- Other methods of direct investigation such as diver investigation, remotely operated underwater vehicle survey, underwater excavation, etc.) (BOEM 2017b).

For this reason, BOEM's March 2017 guidelines encourage developers to coordinate with BOEM and the developer's qualified marine archaeologists during the planning of geotechnical testing and, to the extent practicable, incorporate the relevant results of geotechnical investigation into any required archaeological analysis. Additionally, BOEM's March 2017 guidelines also emphasizes that, prior to the initiation of any identification efforts, BOEM recommends that a developer contact the appropriate SHPO (or THPO, if applicable) to learn about their guidelines for historic property identification, both in state waters and onshore (BOEM 2017b).

With regard to BOEM's March 2017 guidelines for the identification of historic properties that are located on or within the seabed located in state submerged lands or within onshore terrestrial areas, or are located within the viewshed of proposed renewable energy structures, BOEM recommends that historic property identification should be conducted and reported following the guidance published by the New York SHPO and/or provided through BOEM's Section 106 consultation with the New York SHPO (BOEM 2017b). New York State guidance relevant to future wind energy development projects located offshore of New York State is summarized below (see Section 4.2).

Similarly, BOEM's March 2017 guidelines recommend that if BOEM determines that the APE for an undertaking is located on tribal lands (defined in the March 2017 guidance as all lands within the exterior boundaries of any Indian reservation and all dependent Indian communities and applicable to federally recognized Indian tribes), historic property identification should be conducted and reported following the guidance provided by the THPO, if the federally recognized Indian tribe has designated such an official (BOEM 2017b). Such tribal guidance relevant to future wind energy development projects located offshore of New York State would be obtained as an outcome of BOEM's consultation on the definition of the APE for an undertaking pursuant to the terms of BOEM's PA.

4.1.3 BOEM's Guidelines for Geophysical, Geotechnical, and Geohazard Surveys

BOEM issued its July 2, 2015, *Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR 585* to provide BOEM's recommendations for acquiring geophysical, geotechnical, and geohazard information for projects on the OCS, as well as the format for providing this information to BOEM. BOEM developed these guidelines to assist developers with conducting geological

and geotechnical surveys in a manner that produces data of the quality necessary to characterize geotechnical and geological conditions and to identify hazardous features. BOEM's guidelines were developed as recommendations for acquiring the geophysical, geotechnical, and geohazard information necessary for BOEM to conduct a technical and environmental review of developers' project (BOEM 2015).

BOEM has indicated that its July 2, 2015, *Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR 585* replaces similar guidance previously published by BOEM on November 9, 2012. BOEM's July 2, 2015, guidelines were updated to include purpose-driven recommendations for geophysical surveys and geotechnical investigations, additional recommendations for data acquisition instrumentation, and more detailed information about Site Characterization Report formatting, content, and deliverables. Additionally, archaeological survey guidelines that were previously included in BOEM's 2012 guidance have now been separated into the stand-alone document entitled *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585*, as discussed above in Section 4.1.2 (BOEM 2015, 2017b).

However, BOEM intends that its July 2, 2015, *Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR 585* and its March 2017 *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* could be used in tandem, where geophysical and geotechnical survey methods could be used to inform archaeological investigations on the OCS due to similar survey equipment and techniques. Overlap between geophysical and geotechnical surveys and underwater archaeological investigations of the OCS may occur as part of the following:

- **Site characterization investigations**, which would include desktop studies, seabed exploration, laboratory testing of collected sediment samples, and evaluation and assessment of geotechnical engineering properties.
- **Pre-survey coordination** with BOEM prior to the initiation of survey activities through the preparation of a survey plan and a pre-survey meeting.
- **HRG survey**, which would involve survey coverage specific to project siting surveys and transmission corridor surveys, selection of appropriate data acquisition instrumentation (including navigation and positioning systems, bathymetry systems, and magnetometers; side-scan sonar; and sub-bottom profilers, which may include high-frequency CHIRP [compressed high-impact radar pulse] systems and medium-penetration seismic systems), and seabed sampling.

- **Geotechnical investigations**, which would include geotechnical exploration using a combination of drilling or boring and sampling of sediments, laboratory testing, and geotechnical engineering analysis, including visual inspection of vibracores for the presence of intact paleosols, sampling of subsurface organic materials for paleoenvironmental analysis, radiometric dating, or other applicable analyses (BOEM 2015).

4.1.4 BOEM’s Guidance for Viewshed Modelling and Visual Simulations

As discussed above in Section 4.1.1, BOEM requires project-specific viewshed modelling and visual simulations as part of a proposed project’s COP (BOEM 2017c). BOEM’s 2016 *Guidelines for Information Requirements for a Renewable Energy Construction and Operations Plan (COP)* provide specific guidance for such viewshed modelling and visual simulations (BOEM 2016c). This guidance was developed as part of the Best Management Policies and Practices for visual resources that were adopted in the Record of Decision for BOEM’s 2007 Programmatic Environmental Impact Statement to support the establishment of its Alternative Energy and Alternate Use Program. For visual resources, these Best Management Policies and Practices dictate that:

- Lessees and grantees for wind projects shall address key design elements, including visual uniformity, use of tubular towers, and proportion and color of turbines.
- Lessees and grantees for wind projects shall use appropriate viewshed mapping, photographic and virtual simulations, computer simulation, and field inventory techniques to determine, with reasonable accuracy, the visibility of the proposed project. Simulations should illustrate sensitive and scenic viewpoints.
- Lessees and grantees shall comply with Federal Aviation Administration and U.S. Coast Guard requirements for lighting while minimizing the impacts through appropriate application.
- Lessees and grantees shall seek public input in evaluating the visual site design elements of proposed wind energy facilities.
- Within Federal Aviation Administration guidelines, directional aviation lights that minimize visibility from shore should be used (BOEM 2016c).

The purpose for such viewshed modelling and visual simulations is to provide BOEM with information to identify the potential impacts of renewable energy projects on visual resources. However, this same information can be applied to the evaluation of impacts on cultural resources and effects on historic properties and to identify potential measures to avoid, minimize, or mitigate any potential adverse visual impacts or effects on those historic properties for which viewshed, views, or setting are character-defining features that contribute to their significance as cultural resources or historic properties.

Because of the interest of stakeholders regarding visual impacts of potential future renewable energy development offshore of New York State, within which the AoA is located, BOEM undertook a project to develop visual simulations of a hypothetical wind energy facility on the OCS offshore Long Island, New York. The purpose of the study was to characterize the potential onshore visibility of offshore wind turbines from locations along the coasts of New York and New Jersey under different seasons, times of day, and weather conditions. The results of BOEM's study were presented in a Compendium Report that accompanies the visual simulations (URS Group, Inc. and Truescape 2015). BOEM considers the Compendium Report to be an essential component for understanding the process and methodology for developing visual simulations to assess the potential visual impacts of renewable energy projects offshore of New York (BOEM 2017c).

These considerations were similarly recognized as part of the Rhode Island Special Area Management Plan (RI CRMC 2010). As part of the analyses associated with Deepwater Wind's Block Island Wind Farm constructed offshore of Rhode Island, a visual impact assessment was conducted that took into account key observation points and visual simulations. This study considered the height of the proposed turbines, guidance from European studies, and the need to assess potential visibility from sensitive resource sites on the adjacent mainland (EDR 2012). Although these studies did not identify historic properties within the AoA, they serve to demonstrate the potential visibility of offshore windfarms from selected onshore locations, thus providing a model strategy for assessing sensitivities and risks to historic properties from offshore wind energy development projects located offshore of New York.

4.1.5 BOEM's Guidance for Identifying Tribal Cultural Landscapes

As discussed above in Section 4.1.1, BOEM's 2016 PA stipulates that BOEM will continue to consult with affected federally recognized Indian tribes throughout the implementation of the PA on subjects related to the various undertakings covered by the PA (BOEM 2016a). Additionally, BOEM's 2016 PA requires that developers follow BOEM's *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585*, which recommend that if BOEM determines that the APE for an undertaking is located on tribal lands (defined in the March 2017 guidance as all lands within the exterior boundaries of any Indian reservation and all dependent Indian communities and applicable to federally recognized Indian tribes), historic property identification should be conducted and reported following the guidance provided by the THPO, if the federally recognized Indian tribe has designated such an official (BOEM 2017b). Such tribal guidance relevant to future wind energy development projects located offshore of New York State would be obtained as an outcome of BOEM's consultation on the definition of the APE for an undertaking pursuant to the terms of BOEM's PA.

BOEM's Pacific OCS Region has developed guidance for an approach to effective consultation with federally recognized Indian tribes, as well as non-federally recognized Indian tribes, in advance of proposed undertakings in order to identify areas of tribal use and significance that could be impacted by the siting of offshore renewable energy projects. This guidance, entitled *A Guidance Document for Characterizing Tribal Cultural Landscapes* (Ball et al. 2015), is not official BOEM policy; rather, it is considered a tool developed by BOEM's Pacific OCS Region to help ensure the participation of federally recognized Indian tribal governments and to assist in the identification and protection of resources of interest to them.

The authors of BOEM's 2015 tribal consultation guidance document proposed that a "tribal cultural landscape" approach may be a better way to understand Native American resources than the typical approach of identifying and evaluating the NRHP eligibility of discrete resources such as archaeological sites or TCPs. For this approach, the authors defined a tribal cultural landscape as "any place in which a relationship, past or present, exists between a spatial area, resource, and an associated group of indigenous people whose cultural practices, beliefs, or identity connects them to that place. A tribal cultural landscape is determined by and known to a culturally related group of indigenous people with relationships to that place" (Ball et al. 2015).

With regard to BOEM's 2015 *A Guidance Document for Characterizing Tribal Cultural Landscapes*, the authors proposed that use of such an approach would assist BOEM with considering the identification of cultural resources and historic properties from an indigenous perspective, acknowledging the culturally sensitive information about a place that a federally recognized, as well as non-federally recognized, Indian tribe may have, and a process for implementing a tribal cultural approach to consultation with federally and non-federally recognized Native American tribes (Ball et al. 2015).

4.2 State Guidelines – OPRHP

Under Section 106 of the NHPA, the NY SHPO is a consulting party to the Section 106 compliance process and plays an advisory role to the lead federal agency and assists the federal agency with carrying out its Section 106 responsibilities by reflecting the interests of the State and its citizens in the preservation of their cultural heritage (ACHP 2004). The NY SHPO's Section 106 regulatory role is acknowledged in BOEM's 2016 PA, as discussed above in Sections 1.1.3.2 and 4.1.1.

Additionally, as part of its environmental review pursuant to Section 106 of the NHPA and Section 14.09 of the New York State Historic Preservation Act, the SHPO's role in the federal and State review process is to ensure that effects or impacts on eligible or listed properties are considered and avoided or mitigated during the project planning process. In addition, the SHPO advises local communities on local preservation environmental reviews, upon request, under the provisions of the State Environmental Quality Review Act (OPRHP 2017d).

The NY SHPO, and its regulatory compliance staff at OPRHP, also play an important role in the identification and evaluation of historic properties by issuing state guidance for cultural resources investigations that may be required as part of the Section 106 compliance process. New York SHPO has issued guidelines for cultural resources investigations, including associated reporting, that are typically followed for cultural resources investigations conducted in New York State as part of compliance with Section 106 of the NHPA. This guidance consists of the following documents:

- *New York State Historic Preservation Office (SHPO) Phase I Archaeological Report Format Requirements* (OPRHP 2005). This guidance document was developed by the NY SHPO to provide guidance for the presentation of information obtained as part of Phase I archaeological investigations, including information that is required for all reporting as well as the specific formatting of reports. This document specifically notes that Phase IB archaeological (field) investigations must follow the New York Archaeological Council (NYAC) Standards (1994) (see below). Additionally, NY SHPO notes that this guidance document is used for those federal agencies that do not have report standards/formats specific to their programs (OPRHP 2005). This guidance would primarily be followed for onshore (terrestrial) archaeological investigations, although reporting format requirements may also be applicable to underwater archaeological investigations.
- *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State*. This guidance document was developed by the NYAC, and adopted by the OPRHP in 1994 (NYAC 1994). It provides standards for conducting Phase I, II, and III archaeological resources investigations, standards for the production of reports, and the curation of archaeological collections. This guidance would primarily be followed for onshore (terrestrial) archaeological investigations, although curation and reporting format requirements may also be applicable to underwater archaeological investigations.

- *Recommended Standards for Historic Resources Surveys* (OPRHP 2010). This guidance document was developed by the OPRHP to provide the survey methodology for architectural resources, including preparing historic and architectural overviews; establishing guidelines and selection criteria based on those overviews; organizing annotated properties lists; and developing conclusions and recommendations for the results of architectural or historic resources surveys. It provides guidance for including information in appendices and identifies additional resources to consult when developing and implementing architectural or historic resources surveys. It also provides guidance for submitting the results of such surveys to the OPRHP for review and acceptance (OPRHP 2010). This guidance would primarily be followed for onshore (terrestrial) architectural surveys in New York State, although some aspects of this guidance may also be applicable to underwater architectural or built resources investigations.
- *New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Survey Work* (OPRHP 2006). This guidance document was developed by the NY SHPO to provide guidelines for the assessment of architectural and archaeological resources associated with the development of wind farm projects in New York State. While not explicitly stated, this guidance was developed for onshore (terrestrial) wind energy development projects. It provides guidance for the establishment of direct and indirect (visual) APEs, the methodologies for conducting architectural surveys and Phase I archaeological investigations, preparing reports, and providing electronic (GIS) survey data. This guidance would primarily be followed for onshore (terrestrial) wind energy development projects in New York State, although some aspects of this guidance may also be applicable to future wind energy development projects located offshore of New York State.
- *OPRHP's Technical Preservation Guidance for Historic Landscapes* (OPRHP 2017f). This technical preservation guidance was developed by the OPRHP to assist with New York SHPO review of projects to ensure the long-term protection of historic properties. With regard to historic landscapes, OPRHP's guidance identifies the following characteristics as key elements of historic landscapes that should be considered when planning a project: topography, vegetation, circulation, buildings and structures, site furnishings and objects, and spatial organization and land patterns (OPRHP 2017g). This guidance would primarily be applicable to onshore (terrestrial) components of future wind energy development projects located offshore of New York State, although some aspects of this guidance may also be applicable to offshore components of such projects.

4.3 State Permitting – NYSM

As discussed above in Section 1.3.2.1, developers of future wind energy development projects located offshore of New York State would have to obtain a State Lands Permit from the NYSM prior to conducting geotechnical or geophysical surveys or constructing any components of offshore wind energy projects located on state lands or on submerged lands under state waters. The NYSM requires specific information related to a project as part of its State Lands Permit application process, including the following:

- Site details (if investigating a specific archaeological or paleontological site).
- Detailed plans for the operation of a project, including non-invasive survey methodology and recording, excavation of non-cultural or sterile overburden and recording, excavation of cultural or geological deposits, exposure and recovery of objects or specimens, mapping, and data recording.
- Conservation information, including conservation, cataloguing, storage, and analysis of excavated and collected materials.
- Proposals and a time frame for submitting preliminary and final research reports, along with accompanying maps and charts showing the location and boundaries of the study area (NYSM 2017d).

As noted above in Section 1.3.2.1, a State Lands Permit is not required for those components of future wind energy development projects that are located in the offshore AoA. However, they would be applicable to those components of the project that are located on state lands, including submerged lands under state waters.

4.4 Other Federal Guidelines

In addition to the specific federal (BOEM) and State (OPRHP and NYSM) guidelines discussed above in Sections 4.1 and 4.2, respectively, the identification and evaluation of cultural resources and historic properties typically follows guidance issued by the NPS (NPS 2017g). NPS guidance that would likely be most applicable to cultural resources investigations conducted for future wind energy development projects located offshore of New York State includes, but may not be limited to, the following bulletins:

- *NPS Bulletin 15 – How to Apply the National Register Criteria for Evaluation* (Andrus 2002). This bulletin was developed as guidance for understanding and applying significance criteria as part of the NRHP-eligibility evaluation process. This bulletin explains the criteria used for evaluating NRHP eligibility, including establishing significance, considering integrity, applying Criteria A-D (which consider significance in relation to events, people, characteristics, or potential for yielding additional information, respectively), and criteria considerations for those resources that appear to be significant but are less than 50 years old. These guidelines also summarize criteria for evaluating a cultural resource to determine if it is significant at the national level and if it should be considered for designation as an NHL.
- *NPS Bulletin 36 – Guidelines for Evaluating and Registering Archaeological Properties* (Little et. al. 2000). This bulletin was developed as guidance for evaluating archaeological sites for NRHP eligibility and documenting those sites that are determined to be NRHP eligible.

- *NPS Bulletin 30 – Guidelines for Evaluating and Documenting Rural Historic Landscapes* (McClelland et al. 1999). This bulletin was developed as guidance for recognizing, documenting, and evaluating historic landscapes, generally defining such landscapes as “a geographical area that historically has been used by people, or shaped or modified by human activity, occupancy, or intervention, and that possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and natural features.” A rural landscape “commonly reflects the day-to-day occupational activities of people engaged in traditional work such as mining, fishing, and various types of agriculture ... that have developed and evolved in response to both the forces of nature and the pragmatic need to make a living.” Most such landscapes are very large and contain a number of buildings sites and structures.
- *NPS Bulletin 38 – Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1998). This bulletin was developed as guidance for identifying traditional cultural properties and evaluating them for NRHP eligibility. This bulletin provides a definition for traditional cultural properties and provides guidance on methods for documenting traditional cultural properties and determining their NRHP eligibility.
- *NPS Bulletin 20 – Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places* (Delgado 1992). This bulletin was developed as guidance for evaluating historic vessels and shipwrecks for NRHP eligibility and nominating NRHP-eligible historic vessels and shipwrecks for listing in the NRHP. It provides information on the five basic types of historic vessels that may be considered, including shipwrecks. It also provides guidance on the professional qualifications necessary to evaluate historic shipwrecks and vessels for NRHP eligibility; the role that types and characteristics, historic context, significance, and integrity play in determining NRHP eligibility; and fieldwork, research, and documentation techniques that should be used as part of identifying and evaluating historic vessels and shipwrecks for NRHP eligibility.

4.5 Best Management Practices

BMPs are practices and procedures that help to avoid, minimize, or mitigate potential adverse impacts on cultural resources or effects on historic properties that may result from project implementation. This discussion organizes the representative BMPS according to their potential implementation as part of pre-construction/permitting, construction, and operational activities for wind energy development projects located offshore of New York. These BMPs are intended to supplement the cultural resources investigations that BOEM requires for offshore wind energy development projects in the AoA per federal and state guidance and as an outcome of consultation in accordance with BOEM’s 2016 PA.

The following discussion is intended to identify representative BMPs that are commonly employed by project developers and commonly accepted by federal and state regulating agencies. The specific measures to avoid, minimize, or mitigate adverse effects on historic properties, which may include none, some, or all of these BMPs, would be established as an outcome of BOEM's Section 106 review and consultation in accordance with BOEM's 2016 PA.

4.5.1 Pre-Construction/Permitting BMPs

- **Ensure cultural resources investigations are conducted by qualified professionals –** Qualified professionals (for terrestrial and underwater archaeology and architectural history or historic architecture) should be utilized for conducting the necessary identification surveys and to assist the agencies in evaluating the potential eligibility of resources for the National (or State) Register. The Secretary of Interior's Professional Qualification Standards (36 CFR Part 61, Appendix A) are commonly used to identify qualified cultural resources professionals, including specific levels of education and experience.

Additionally, BOEM's *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* (BOEM 2017b) recommends that archaeological surveys should be designed, with input from a qualified marine archaeologist and specialists in other fields as appropriate (e.g., geology and geomorphology), in a manner that is capable of identifying site types such as historic period sites (shipwrecks and associated remains, sunken aircraft, and other maritime infrastructure) and indigenous archaeological sites that were once part of a terrestrial landscape but have since been submerged by global sea level rise. BOEM's *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* defines a "qualified marine archaeologist" as an archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738- 44739) and has experience in conducting HRG surveys and processing and interpreting the resulting data for archaeological potential (BOEM 2017b). BOEM's 2016 PA also provides definitions for qualified cultural resources consultants, including defining a qualified marine archaeologist as a person who meets the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738- 44739) and has experience in analyzing marine geophysical data; and defining a qualified architectural historian as a person who meets the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738- 44739) and has experience analyzing structures, historic districts, and landscapes (BOEM 2016a).

Many state historic preservation agencies maintain lists of cultural resources consultants that the agencies have determined are qualified to conduct cultural resources investigations within that state. The New York SHPO does not maintain such a list, although it offers guidance for developers to assist them with choosing a cultural resources consultant. The New York SHPO's

guidance includes ensuring that the cultural resources consultant is 26 CFR 61-qualified; defining the scope of work carefully; sending the scope of work to several qualified consultants; considering qualifications and references of consultants carefully; interviewing the best qualified consultants; agreeing on responsibilities and cost with the selected consultant; and avoiding possible conflicts of interest (OPRHP 2017e).

Additionally, other professionals may also be required to assist in the evaluation of potential impacts on cultural resources and effects on historic properties. For example, the services of visual resources specialists may be required to assist with the assessment of visual impacts of future wind energy development projects located offshore of New York State on visual resources or visually sensitive areas. The results of such analysis would likely be used in evaluating the potential visual impacts of future wind energy development projects on views, viewsheds, or settings that are character-defining features that contribute to the significance of a historic property. These professionals should be skilled in the development and use of visual modelling and visual simulations of existing and modified landscapes and settings for both day and nighttime operations.

- **Develop a work plan for cultural resources investigations** – In coordination with the relevant federal and state regulating agencies, developers of future wind energy development projects located offshore of New York State should prepare a work plan that specifies the scope, and level of effort, for the identification and evaluation of cultural resources and historic properties for a proposed project. The work plan would document, at minimum, the scope and level of effort for background research methods, archaeological and architectural survey techniques for onshore and offshore cultural resources investigations, and reporting requirements. The work plan would be developed to adhere to existing agreements by federal and state regulating agencies, such as BOEM’s 2016 PA, and to adhere to federal and state agency guidance for cultural resources investigations, such as those listed above in Sections 4.1 through 4.4.

4.5.2 Construction BMPs

- **Address the potential for unanticipated discoveries** – In coordination with the relevant federal and state regulating agencies and any other applicable parties (e.g., indigenous nations), developers of future wind energy development projects located offshore of New York State should prepare an unanticipated discoveries plan that addresses the unanticipated discovery of archaeological resources and human remains in both onshore (terrestrial) and offshore (underwater) portions of a project during construction and operation of a project. Such a plan may include, but would not be limited to, provisions for archaeological and/or tribal monitoring of archaeological and/or culturally sensitive areas during construction, procedures to be followed in the event that an unanticipated archaeological resource is identified during construction, and procedures to be followed in the event that human remains are encountered during construction.
- **Implement protective measures for known cultural resources and historic properties** – In coordination with the relevant federal and state regulating agencies and any other applicable parties (e.g., indigenous nations), developers of future wind energy development projects

located offshore of New York State should be prepared to develop and implement protective measures for known cultural resources and historic properties. These measures may include, but would not be limited to, conducting training for all construction personnel as to archaeologically or culturally sensitive areas that should be avoided during construction; establishing and maintaining buffer areas for onshore and offshore archaeologically or culturally sensitive areas; and on-site monitoring by qualified cultural resources and/or tribal monitors during construction.

- **Maintain the confidentiality of archaeological resources (onshore and offshore)** – Information about the location of known archaeological and/or tribal resources should be kept confidential. However, general locations for such resources, including any required buffer areas around such resources, should be marked on construction drawings as environmentally sensitive areas that construction crews should avoid.

4.5.3 Post-Construction/Operation BMPs

- **Implement measures to avoid, reduce, or mitigate potential adverse impacts on cultural resources and adverse effects on historic properties** – In coordination with the relevant federal and state regulating agencies and any other applicable parties (e.g., indigenous nations), developers of future wind energy development projects located offshore of New York State should be prepared to develop and implement permanent buffers or screening to avoid, minimize, or mitigate physical or visual impacts on cultural resources or effects on historic properties. These measures may include, but would not be limited to, establishing and maintaining buffer areas for onshore and offshore archaeologically or culturally sensitive areas or creating vegetative barriers to screen onshore (terrestrial) cultural resources from visual impacts or effects.
- **Implement measures to protect areas subject to coastal erosion** – In coordination with the relevant federal and state regulating agencies and any other applicable parties (e.g., indigenous nations), developers of future wind energy development projects located offshore of New York State should be prepared to develop and implement measures for erosion control in the vicinity of coastal archaeological resources. These measures may include, but would not be limited to, establishment of vegetation; placement of revetments, hay bales, breakwaters, groins, bulkheads and sea walls; dune construction; or beach renourishment. For these measures, the use of experienced professionals in design and planning would be necessary.
- **Establish appropriate management buffers** – In coordination with the relevant federal and state regulating agencies and any other applicable parties (e.g., indigenous nations), developers of future wind energy development projects located offshore of New York State should be prepared to maintain the buffers established during construction throughout operation, or modify such buffers as appropriate to account for potential impact or effects from operations and maintenance activities. Similar to construction, these measures may include, but would not be limited to, conducting training for all operating personnel as to archaeologically or culturally sensitive areas that should be avoided during operation or maintenance activities; maintaining buffer areas for onshore and offshore archaeologically or culturally sensitive areas; and regular monitoring of, and reporting for, such areas by trained personnel during operation and maintenance activities.

5 References

- Advisory Council on Historic Preservation (ACHP). 2004. *36 CFR Part 800 – Protection of Historic Properties (incorporating amendments effective August 5, 2004)*. Accessed November 7, 2017. <http://www.achp.gov/regs-rev04.pdf>.
- Andrus, P.W. 2002. “How to Apply the National Register Criteria for Evaluation.” *National Register Bulletin No.15*. U.S. Department of the Interior, National Park Service. Accessed November 6, 2017. <https://www.nps.gov/nr/publications/bulletins/nrb15/>.
- Aqua Explorers. 2017. *The New York and New Jersey Ship Directory*. Accessed November 14, 2017. http://www.aquaexplorers.com/shipwrecks_NY_NJ.htm.
- Ball, D., R. Cordera, B. Edwards, V. Crussing, J. Ledford, R. McConnell, R. Monette, R. Steelquist, E. Thorsgard, and J. Townsend. 2015. *A Guidance Document for Characterizing Tribal Cultural Landscapes*. U.S. Department of Interior, Bureau of Ocean Energy Management, Pacific OCS Region, Camarillo, CA, OSC Study BOEM 2015-047. Accessed November 2, 2017. <https://www.boem.gov/2015-047/>.
- Bureau of Ocean Energy Management (BOEM). 2015. *Guidelines for Providing Geophysical, Geotechnical and Geohazard Information Pursuant to 30 CFR Part 585*. July 2, 2015. Accessed June 10, 2017. <https://www.boem.gov/Survey-Guidelines/>.
- _____. 2016a. *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*. Executed June 3, 2016. Accessed July 28, 2017. <https://www.boem.gov/NY-NJ-Programmatic-Agreement-Executed/>.
- _____. 2016b. *Finding of No Historic Properties Affected for the Issuance of a Commercial Lease within the New York State Wind Energy Area on the Outer Continental Shelf Offshore New York*. Accessed November 7, 2017. <https://www.boem.gov/NY-Finding-of-No-Historic-Properties-Affected/>.
- _____. 2016c. *Guidelines for Information Requirements for a Renewable Energy Construction and Operations Plan (COP)*. Version 3.0: April 7, 2016. U.S. Department of the Interior, Office of Renewable Energy Programs, Bureau of Ocean Energy Management. Accessed November 15, 2017. <https://www.boem.gov/COP-Guidelines/>.
- _____. 2016d. *Three Nautical Mile State/Federal Boundary and 12 Nautical Mile Territorial Sea Boundary*. 2016. <https://www.boem.gov/Oil-and-Gas-Energy-Program/Mapping-and-Data/Administrative-Boundaries/Index.aspx>.
- _____. 2017a. *Historic Preservation Activities of the Office of Renewable Energy Programs*. <https://www.boem.gov/Renewable-Energy/Historic-Preservation-Activities/>.

- _____. 2017b. *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585*. March 2017. Accessed November 2, 2017. https://www.boem.gov/Guidelines_for_Providing_Archaeological_and_Historic_Property_Information_Pursuant_to_30CFR585/.
- _____. 2017c. *Renewable Energy Viewshed Analysis and Visualization Simulation for the New York Call Area*. Accessed June 17, 2017. <https://www.boem.gov/New-York-Visual-Simulations/>.
- Burns, B. 2016. *History of the Atlantic Cable & Submarine Telegraphy*. Telegraph Cable Web Ring. <http://atlantic-cable.com/>. Accessed June 13, 2017.
- Delgado, J.P. 1992. "Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places." *National Register Bulletin No. 20*. U.S. Department of the Interior. National Park Service. Accessed November 6, 2017. <https://www.nps.gov/nr/publications/bulletins/nrb20/>.
- EDR Companies (EDR). 2012. *Visual Impact Assessment, Block Island Windfarm. Prepared for Deepwater Wind Block Island, LLC*. Accessed November 19, 2017. <http://dwwind.com/wp-content/uploads/2014/08/Appx-S1-Visual-Impact-Assessment.pdf>.
- ESRI. 2010. *Maps throughout this report were created using ArcGIS® software by ESRI*. ArcGIS® and ArcMap™ are the intellectual property of Esri and are used herein under license. Copyright ESRI. All rights reserved. For more information about Esri® software, please visit www.esri.com.
- Gibbins, D. and J. Adams. 2001. "Shipwrecks and Maritime Archaeology." *World Archaeology* 32(3):279-291.
- Huundemann, A. 2003. *The World Wide History of Telecommunications*. John Wiley and Sons, Hoboken, New Jersey.
- Jin, H., R. Bea and B.P.M. Sharples. 2002. *Failure Analysis of Texas Tower No. 4*. Paper prepared for presentation at the 2002 Offshore Technology Conference held in Houston, Texas U.S.A., May 6-9, 2002.
- Klein, J.I., M.D. Harris, W.M. Tankersley, R. Meyer, G.C. Smith, and W.J. Chadwick. 2012a. *Evaluation of Visual Impact on Cultural Resources/Historic Properties: North Atlantic, Mid-Atlantic, South Atlantic, and Florida Straits*. Volume I: Technical report of findings. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study BOEM 2012-006. 24 pp. Accessed December 5, 2016. <https://www.boem.gov/ESPIS/5/5249.pdf>.
- Klein, J.I., M.D. Harris, W.M. Tankersley, R. Meyer, G.C. Smith, and W.J. Chadwick. 2012b. *Evaluation of Visual Impact on Cultural Resources/Historic Properties: North Atlantic, Mid-Atlantic, South Atlantic, and Florida Straits*. Volume II: Appendices. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study BOEM 2012-007. 10 appendices. Accessed December 5, 2016. <https://www.boem.gov/ESPIS/5/5250.pdf>.
- Krivor, M.C. and S.R. James, Jr. 2005. *Remote Sensing Survey of the Proposed Borrow Area for the East Rockaway Reformulation Project, Queens County, New York*. Report prepared for the U.S. Corps of Engineers, New York District by Panamerican Consultants, Inc. Memphis, Tennessee.

- Little, B., E.M. Seibert, J. Townsend, J.H. Sprinkle, Jr., and J. Knoerl. 2000. "Guidelines for Evaluating and Registering Archeological Properties Bulletin." *National Register Bulletin* 36. U.S. Department of the Interior, National Park Service. Accessed November 6, 2017. <https://www.nps.gov/nr/publications/bulletins/pdfs/nrb36.pdf>.
- Lydecker, A., and S.R. James, Jr. 2002. *Remote Sensing Survey in Connection with the New York and New Jersey Harbor Navigation Study Upper and Lower Bay Port of New York and New Jersey Kings, Queens, New York and Richmond Counties, New York and Essex. Hudson, Monmouth and Union Counties, New Jersey*. Report prepared for the U.S. Corps of Engineers, New York District by Panamerican Consultants, Inc. Memphis, Tennessee.
- Lydecker, A. and S.R. James, Jr. 2009. *Final Report: Remote Sensing Survey of Portions of Ambrose Channel and Sandy Hook Pilot Area in Connection with the New York and New Jersey Harbor Navigation Study, King and Richmond Counties, New York*. Report prepared for the U.S. Corps of Engineers, New York District by Panamerican Consultants, Inc. Memphis, Tennessee.
- McClelland, Linda Flint, J. Timothy Keller, Genevieve P. Keller, and Robert Z. Melnick. 1999. "Guidelines for Evaluating and Documenting Rural Historic Landscapes." *National Register Bulletin* 30. U.S. Department of the Interior, National Park Service. Accessed November 19, 2017. <https://www.nps.gov/nr/publications/bulletins/nrb30/>.
- Merwin, D. 2010. *Submerged Evidence of Early Human Occupation in the New York Bight*. Dissertation. Stony Brook University. August 2010.
- _____. 2016a. *Prehistoric Maritime Cultural Landscapes in the New York Bight*. SAA's 81st Annual Meeting in Orlando, Florida, April 6-10, 2016. Accessed July 3, 2017. <http://www.saa.org/AbouttheSociety/AnnualMeeting/ElectronicSymposia/tabid/204/Default.aspx>.
- _____. 2016b. *RE: NY Harbor area*. Personal Communication dated August 19, 2016, from Daria Merwin, Maritime Archaeologist, New York State Office of Parks, Recreation and Historic Preservation, Albany, New York, to Owen Wright, Ecology and Environment, Inc., Buffalo, New York.
- National Oceanic and Atmospheric Administration (NOAA). 2015. U.S. Coastal Relief Model. Accessed June 1, 2017. https://www.ngdc.noaa.gov/docucomp/page?xml=NOAA/NESDIS/NGDC/MGG/DEM/iso/xml/us_crm.xml&view=getDataView&header=none&title=Get%20Data%20NOAA/NESDIS/NGDC/MGG/DEM/iso/xml/us_crm.xml.
- _____. 2016a. *Electronic Navigation Charts (ENC) US5NJ11M, US5NY18M, and US5NY19m*. Updated July 20, 2016. Accessed June 1, 2017. <http://www.charts.noaa.gov/ENCs/ENCsIndv.shtml>.
- _____. 2016b. *Automated Wrecks and Obstructions Information System (AWOIS)*. Interactive electronic GIS reference. Accessed June 1, 2017. https://wrecks.nauticalcharts.noaa.gov/arcgis/rest/services/public_wrecks/Wrecks_And_Obstructions/MapServer/layers.

- _____. 2017a. *United States – East Coast, New York – New Jersey: Approaches to New York, Fire Island Light to Sea Girt*. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Coast Survey. Accessed November 17, 2017. <http://www.charts.noaa.gov/PDFs/12326.pdf>.
- _____. 2017b. *United States – East Coast, New York: Shinnecock Light to Fire Island Light*. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Coast Survey. Accessed November 17, 2017. <http://www.charts.noaa.gov/PDFs/12353.pdf>.
- _____. 2017c. *United States – East Coast, Rhode Island – Connecticut – New York: Block Island Sound and Approaches*. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Coast Survey. Accessed November 17, 2017. <http://www.charts.noaa.gov/PDFs/13205.pdf>.
- _____. 2017d. *United States – East Coast, New York – New Jersey: New York Harbor*. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Coast Survey. Accessed November 17, 2017. <http://www.charts.noaa.gov/PDFs/12327.pdf>.
- _____. 2017e. *United States – East Coast, New Jersey: Sea Girt to Little Egg Inlet*. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Coast Survey. Accessed November 17, 2017. <http://www.charts.noaa.gov/PDFs/12323.pdf>.
- National Park Service (NPS). 2012. *Traditional Cultural Properties (TCPs): A Quick Guide for Preserving Native American Cultural Resources*. National Register of Historic Places. Accessed June 13, 2017. <https://www.nps.gov/history/TRIBES/Documents/TCP.pdf>.
- _____. 2017a. *National Register of Historic Places*. Accessed June 18, 2017. <https://www.nps.gov/nr/>.
- _____. 2017b. *National Historic Landmarks Program*. Accessed November 14, 2017. <https://www.nps.gov/nhl/>.
- _____. 2017c. National Historic Landmarks Program: National Historic Landmarks in New York. <https://www.nps.gov/history/nhl/find/statelists/ny.htm>. Accessed November 15, 2017.
- _____. 2017d. *National NAGPRA Online Databases: Native American Consultation Database: Richmond, Kings, Queens, Nassau, and Suffolk Counties*. Accessed November 2, 2017. <https://grantsdev.cr.nps.gov/Nagpra/NACD/>.
- _____. 2017e. *National NAGPRA Online Databases: Native American Consultation Database: New York State*. Accessed November 2, 2017. <https://grantsdev.cr.nps.gov/Nagpra/NACD/>.
- _____. 2017f. *National NAGPRA: Indian Land Cessions 1784-1894*. Accessed November 2, 2017. https://www.nps.gov/nagpra/ONLINEDB/Land_Cessions/INDEX.HTM.
- _____. 2017g. *National Register of Historic Places Program: Publications*. Accessed November 14, 2017. <https://www.nps.gov/Nr/publications/index.htm>.

- New York Archaeological Council (NYAC). 1994. *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State*. Adopted by the New York SHPO in 1995. Accessed November 2, 2017. <http://nyarchaeology.org/wp-content/uploads/2013/12/NYACStandards.pdf>.
- New York State Department of State (DOS). 2013. *Offshore Atlantic Study*. Accessed September 12, 2017. https://docs.dos.ny.gov/communitieswaterfronts/ocean_docs/NYSDOS_Offshore_Atlantic_Ocean_Study.pdf.
- New York State Energy Research and Development Authority (NYSERDA). 2015. *Advancing the Environmentally Responsible Development of Offshore Wind Energy in New York State: A Regulatory Review and Stakeholder Perceptions*. nyserda.ny.gov/publications. NYSERDA Report 15-16. Prepared by W. Goodale and K. Williams (Biodiversity Research Institute, Portland, Maine). Accessed November 7, 2017. https://r.search.yahoo.com/_ylt=AwrBT6NtziVaTPwANuZXNyoA;_ylu=X3oDMTEybTl0cmg1BGNvbG8DYmYxBHBvcwMxBHZ0aWQDQjQ4MzVfMQRzZWMDc3I-/RV=2/RE=1512455918/RO=10/RU=https%3a%2f%2fwww.nyserda.ny.gov%2f-%2fmedia%2fFiles%2fPublications%2fResearch%2fEnvironmental%2fAdvancing-Environmental-Response-Development-Off-Shore-Wind-New-York.pdf/RK=2/RS=AUfTfUxZfy4NWrynOtucKis2Gqg-.
- New York State Museum (NYSM). 2017a. *State Land Permits: What is Covered by Section 233?* Accessed November 7, 2017. <http://www.nysm.nysed.gov/research-collections/state-land-permits>.
- _____. 2017b. *State Land Permits: What is New York State Education Law Section 233?* Accessed November 7, 2017. <http://www.nysm.nysed.gov/research-collections/state-land-permits>.
- _____. 2017c. *State Land Permits: When Do I Need A Permit?* Accessed November 7, 2017. <http://www.nysm.nysed.gov/research-collections/state-land-permits>.
- _____. 2017d. *State Land Permits*. Accessed November 6, 2017. <http://www.nysm.nysed.gov/research-collections/state-land-permits>.
- New York State Office of Parks, Recreation, and Historic Preservation (OPRHP). 2005. *New York State Historic Preservation Office (SHPO) Phase I Archaeological Report Format Requirements*. Accessed November 2, 2017. <https://parks.ny.gov/shpo/environmental-review/documents/PhaseIReportStandards.pdf>.
- _____. 2006. *New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Survey Work*. Accessed November 2, 2017. <https://parks.ny.gov/shpo/environmental-review/documents/CulturalResourceSurveyGuideWindProjects.pdf>.
- _____. 2010. *Recommended Standards for Historic Resource Surveys*. Prepared by the Field Service Bureau of the Division of Historic Preservation. Accessed November 2, 2017. <https://parks.ny.gov/shpo/survey-evaluation/documents/RecommendedStandardsHistoricResourcesSurvey.pdf>.
- _____. 2016. *Indian Nation Areas of Interest Map*. Accessed November 7, 2017. Prepared by the New York State Historic Preservation Office in consultation with the Indian Nations of New York State. <https://parks.ny.gov/shpo/environmental-review/documents/IndianNationAreasofInterest.pdf>.

- _____. 2017a. *Federal & State Preservation Legislation*. Accessed November 7, 2017. <https://parks.ny.gov/shpo/environmental-review/preservation-legislation.aspx>.
- _____. 2017b. *14.09 State Regulations: Part 428*. Accessed November 7, 2017. <https://parks.ny.gov/shpo/environmental-review/state-regulations.aspx?p=428>.
- _____. 2017c. *Cultural Resources Information System (CRIS)*. Accessed November 17, 2017. Interactive electronic GIS reference. <https://cris.parks.ny.gov/Login.aspx?ReturnUrl=%2f>.
- _____. 2017d. *Environmental Review*. Accessed November 14, 2017. <https://parks.ny.gov/shpo/environmental-review/>.
- _____. 2017e. *Cultural Resource Consultant: How to Choose a Cultural Resource Consultant*. Accessed November 14, 2017. <https://parks.ny.gov/shpo/environmental-review/resource-consultant.aspx>.
- _____. 2017f. *Technical Assistance*. Accessed November 14, 2017. <https://parks.ny.gov/shpo/technical-assistance/>.
- _____. 2017g. *Historic Landscapes*. Accessed November 2, 2017. <https://parks.ny.gov/shpo/technical-assistance/historic-landscapes/default.aspx>.
- North American Aerospace Defense Command (NORAD). 2013. *A Brief History of NORAD*. U.S. Air Force, Colorado Spring, Colorado.
- Parker, P.L., and T.F. King. 1998. *Guidelines for Evaluating and Documenting Traditional Cultural Properties*. Department of the Interior. National Park Service. National Register Bulletin No. 38. <https://www.nps.gov/nr/publications/bulletins/nrb38/>. Accessed November 6, 2017.
- Prendergast, M. 2002. *The German Submarine War 1914-1918*. U.S. Government Printing Office, Washington D.C.
- Ray, T.W. 1965. "A History of Texas Towers In Air Defense 1952-1964." *ADC Historical Study* 29. Self-Published.
- Rhode Island Coastal Resource Management Council (RI CRMC). 2010. *Rhode Island Special Area Management Plan, Ocean SAMP, Vol. I*. Prepared by the University of Rhode Island Coastal Resources Center/Rhode Island Sea Grant College Program. Accessed November 20, 2017. http://seagrant.gso.uri.edu/oceansamp/pdf/samp_crmc_revised/RI_Ocean_SAMP.pdf.
- Schmidt, J.S., K.A. Ryberg, R.C. Goodwin, B.C. Wells, N.J. DeLong, and J. Gardner. 2017. *Geophysical/Cultural Resources Survey to Support Transcontinental Gas Pipeline Company's Offshore Raritan Bay Loop Natural Gas Pipeline Expansion, New Jersey and New York State Waters*. Report prepared for Williams Partners LP by R. Christopher Goodwin & Associates, Inc. Frederick, Maryland.

- South Rhode Island.Com. 2017. *Diving for History in Narragansett Bay: Researchers at URI and Narragansett Tribe members are diving for evidence of early humans in Rhode Island's waters.* Posted May 11, 2017. Accessed November 14, 2017. <http://sorhodeisland.com/stories/uri-narragansett-underwater-archaeology,23339>.
- Stanford, D., and B.A. Bradley. 2012. *Across Atlantic Ice: The Origin of America's Clovis Culture.* University of California Press, Berkeley.
- Thomson Reuters. 2017. *New York Consolidated Laws, Indian Law - IND § 2.* New York Consolidated Laws, state Indian nations and tribes. Accessed November 2, 2017. <http://codes.findlaw.com/ny/indian-law/ind-sect-2.html>.
- TRC Environmental Corporation. 2012. *Inventory and Analysis of Archaeological Site Occurrence on the Atlantic Outer Continental Shelf.* U.S. Department of the Interior, Bureau of Ocean Energy, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study BOEM 2012-008. Accessed November 13, 2017. <https://www.boem.gov/ESPIS/5/5196.pdf>.
- U.S. Department of Housing and Urban Development (HUD). 2017. *Tribal Directory Assessment Tool.* Accessed November 2, 2107. <https://egis.hud.gov/tdata/>.
- U.S. Senate. 1961. *Inquiry into the Collapse of Texas Tower No.4: Hearings before the Preparedness Investigation Subcommittee of the Committee on Armed Forces, United States Senate, Eighty-Seventh Congress, First Session, May 3, 4, 10, 11, and 17.* U.S. Government Printing Office, Washington D.C.
- URS Group, Inc. and Truescape. 2015. *Renewable Energy Viewshed Analysis and Visualization Simulation for the New York Outer Continental Shelf Call Area: Compendium Report.* Prepared by URS Group, Inc. and Truescape, for the U.S. Department of the Interior, Bureau of Ocean Energy Management. BOEM Call Order No. M14PD00012 85 pp. + appendices. Accessed November 15, 2017. <https://www.boem.gov/Compendium-Report-Final/>.
- Watts, G.P. 2013. *Phase I Remote Sensing archaeological Survey of Three Proposed Borrow Pit Sites and Four Temporary Pipeline Corridors South of Bridgehampton and Sagaponack, Suffolk County, New York.* Report prepared for Costal Science and Engineering by Tidewater Atlantic Research, Inc., Washington, North Carolina.

**Appendix A. Programmatic Agreement for Section 106
Review of Outer Continental Shelf Renewable Energy
Activities Offshore New Jersey and New York**

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

WHEREAS, the Outer Continental Shelf Lands Act grants the Secretary of the Interior (Secretary) the authority to issue leases, easements, or rights-of-way on the Outer Continental Shelf (OCS) for the purpose of renewable energy development, including wind energy development (*see* 43 U.S.C. §1337(p)(1)(C)), and to promulgate regulations to carry out this authority (*see* 43 U.S.C. §1337(p)(8)); and,

WHEREAS, the Secretary delegated this authority to the former Minerals Management Service, now the Bureau of Ocean Energy Management (BOEM), and promulgated final regulations implementing this authority at 30 CFR §585; and,

WHEREAS, under the renewable energy regulations, the issuance of leases and subsequent approval of wind energy development on the OCS is a staged decision-making process that occurs in distinct phases; and,

WHEREAS, OCS means all submerged lands lying seaward and outside of the area of lands beneath navigable waters, as defined in Section 2 of the Submerged Lands Act (43 U.S.C. §1301), whose subsoil and seabed appertain to the United States and are subject to its jurisdiction and control (*see* 30 CFR §585.112); and,

WHEREAS, BOEM may issue commercial leases, limited leases, research leases, Right-of-Way (ROW) grants, or Right-of-Use and easement (RUE) grants on the OCS (*see* Appendix); and,

WHEREAS, Commercial leases, Limited leases, ROW grants, and RUE grants do not authorize the lessee or grantee to construct any facilities; rather, the lease or grant authorizes the lessee or grantee the right to use the leased area to develop plans, which must be submitted to and approved by BOEM before the lessee or grantee implements its plans (*see* 30 CFR §585.600 and §585.601); and,

WHEREAS, under BOEM's renewable energy regulations, BOEM will review and may approve, approve with modifications, or disapprove Site Assessment Plans (SAPs), Construction and Operations Plans (COPs), General Activities Plans (GAPs), or other plans, collectively "Plans" (*see* 30 CFR §585.613(e), §585.628(f), and §585.648(e)); and,

WHEREAS, BOEM determined that issuing leases and grants and approving Plans constitute undertakings subject to Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. §470(f)), and its implementing regulations (36 CFR §800); and,

WHEREAS, the issuance of a commercial lease, limited lease, ROW grant, or RUE grant has the potential to affect historic properties insofar as it may lead to the lessee or grantee conducting geophysical survey and geotechnical testing; and,

WHEREAS, BOEM has determined that geophysical survey is not likely to have the potential to affect historic properties; and,

WHEREAS, the issuance of a research lease or approval of a Plan has the potential to affect historic properties insofar as it may lead to the lessee conducting geotechnical testing; constructing and operating site assessment facilities and renewable energy structures; and, placing and operating transmission cables, pipelines, and/or associated facilities that involve the transportation or transmission of electricity or other energy products from renewable energy projects; and,

WHEREAS, BOEM may issue multiple renewable energy leases and grants and approve multiple Plans associated with each lease or grant issued on the OCS; and,

WHEREAS, BOEM's renewable energy regulations also contemplate the development of a lease in multiple phases (*see* 30 CFR §585.629); and

WHEREAS, BOEM determined that the implementation of the Offshore Renewable Energy Program is complex, as the decisions on these undertakings are phased, and the effects on historic properties are regional in scope, pursuant to 36 CFR §800.14(b); and,

WHEREAS, 36 CFR §800.4(b)(2) provides for deferral of final identification and evaluation of historic properties when provided for in a Programmatic Agreement (Agreement) executed pursuant to 36 CFR §800.14(b); and,

WHEREAS, BOEM determined that the identification and evaluation of historic properties shall be conducted through a phased approach, pursuant to 36 CFR §800.4(b)(2), where the final identification of historic properties may occur after the issuance of a lease or grant and before the approval of a Plan because lessees conduct site characterization surveys in preparation for Plan submittal (*see* 30 CFR Part 585); and,

WHEREAS, the deferral of final identification and evaluation of historic properties could result in the discovery of previously unknown historic properties that could significantly impact project planning, siting, and timelines; and,

WHEREAS, 36 CFR §800.14(b)(3) provides for developing programmatic agreements for complex or multiple undertakings and §800.14(b)(1) provides for using such agreements when effects on historic properties cannot be fully determined prior to approval of an undertaking (*see* §800.14(b)(1)(ii)), when effects on historic properties are regional in scope (*see* §800.14(b)(1)(i)), and for other circumstances warranting a departure from the normal Section 106 process (*see* §800.14(b)(1)(v)); and,

WHEREAS, BOEM, the New Jersey State Historic Preservation Officer (SHPO), the New York SHPO, and the Advisory Council on Historic Preservation (ACHP) are consulting parties and signatories to this Agreement, pursuant to 36 CFR §800.14; and,

WHEREAS, the Shinnecock Indian Nation is a Tribe, as defined at 36 CFR §800.16(m), that has chosen to consult with BOEM and participate in development of this Agreement; and

WHEREAS, BOEM shall continue to consult with this and other Tribes, Tribal Historic Preservation Officers (THPO), and/or their designee to identify properties of religious and cultural significance that may be eligible for listing in the National Register of Historic Places (including Traditional Cultural Properties) and that may be affected by these undertakings; and,

WHEREAS, the Section 106 consultations described in this Agreement will be used to establish a process to identify historic properties located within the undertakings' Area(s) of Potential Effects (APE); to assess potential effects; and to avoid, reduce, or resolve any adverse effects; and,

WHEREAS, BOEM involves the public and identifies other consulting parties through notifications, requests for comments, existing renewable energy task forces, contact with the SHPO, and National Environmental Policy Act scoping meetings and communications for these proposed actions;

NOW, THEREFORE, BOEM, the New Jersey SHPO, the New York SHPO, and the ACHP agree that Section 106 review shall be conducted in accordance with the following stipulations:

STIPULATIONS

- I. For the undertakings of issuing a commercial lease, limited lease, research lease, ROW grant, or RUE grant, the signatories agree:
 - A. The APE will be defined as the depth and breadth of the seabed that could potentially be impacted by geotechnical testing.
 - B. A reasonable and good faith effort to carry out appropriate identification of historic properties within the APE is presented in BOEM's *Guidelines for Providing Geological and Geophysical, Hazards, and Archaeological Information Pursuant to 30 CFR Part 585* (July 2015; *Guidelines*; see 36 CFR §800.4(b)(1)). Should BOEM wish to alter any archaeological survey-related information included in the *Guidelines*, BOEM will first consult with the signatories.
 - C. Prior to lease or grant issuance under this part, BOEM will identify consulting parties, pursuant to 36 CFR §800.3(f). BOEM will consult on existing, non-proprietary information regarding the proposed undertaking and the geographic extent of the APE, as defined in Stipulation I.A. BOEM also will solicit additional information on potential historic properties within the APE from consulting parties and the public.
 - D. BOEM will administratively treat all identified potential historic properties as eligible for inclusion in the National Register unless BOEM determines, and the SHPOs, or THPO if on tribal lands, agree that a property is ineligible, pursuant to 36 CFR §800.4(c).

- E. Where practicable, BOEM will require lessees and grantees to avoid effects to historic properties through lease stipulations, resulting in BOEM recording a finding of *no historic properties affected*, consistent with 36 CFR §800.4(d)(1). If it is determined that there will be effects to historic properties, BOEM will follow 36 CFR §800.5. Any adverse effects will be resolved by following 36 CFR §800.6 and 36 CFR §800.10 for National Historic Landmarks.
- II. For the undertakings of approving a Plan, except as described under Stipulation IV below, the signatories agree:
- A. The APE will be defined as the depth and breadth of the seabed that could potentially be impacted by seafloor/bottom-disturbing activities associated with the undertakings; the offshore and onshore viewshed from which renewable energy structures would be visible; and, if applicable, the depth, breadth, and viewshed of onshore locations where transmission cables or pipelines come ashore until they connect to existing power grid structures.
 - B. The following constitute a reasonable and good faith effort to carry out appropriate identification of historic properties (*see* 36 CFR §800.4(b)(1)):
 - 1. For the identification of historic properties within the seabed portion of the APE located on the OCS, historic property identification survey results generated in accordance with BOEM's *Guidelines*.
 - 2. For the identification of historic properties within the seabed portion of the APE located in state submerged lands or within the onshore terrestrial portion of the APE, historic property identification conducted in accordance with state (or tribal, if on tribal lands) guidelines. BOEM will request the developer to coordinate with the SHPO, or THPO if on tribal lands, prior to the initiation of any such identification efforts.
 - 3. For the identification of historic properties within the viewshed portion of the APE, historic property identification conducted in accordance with state (or tribal, if on tribal lands) guidelines. BOEM will request the developer to coordinate with the SHPO, or THPO if on tribal lands, prior to the initiation of any such identification efforts.
 - C. Prior to approving a Plan, BOEM will identify consulting parties, pursuant to 36 CFR §800.3(f). BOEM will consult on existing, non-proprietary information regarding the proposed undertaking (including the results of historic property identification surveys) and the geographic extent of the APE, as defined in Stipulation II.A. BOEM also will solicit from the consulting parties and the public additional information on potential historic properties within the APE.
 - D. BOEM will treat all identified potential historic properties as eligible for inclusion in the National Register unless BOEM determines, and the SHPOs, or THPO if on tribal lands, agrees, that a property is ineligible, pursuant to 36 CFR §800.4(c).

- E. Where practicable, as a condition of Plan approval, BOEM will require the lessee to relocate elements of the proposed project that may affect potential historic properties, resulting in BOEM recording a finding of *no historic properties affected*, consistent with 36 CFR §800.4(d)(1).
 - 1. If effects to identified properties cannot be avoided, BOEM will evaluate the National Register eligibility of the properties, in accordance with 36 CFR §800.4(c).
 - a. If BOEM determines all of the properties affected are ineligible for inclusion in the National Register, and the SHPO, or THPO if on tribal lands, agrees, BOEM will make a finding of *no historic properties affected*, consistent with 36 CFR §800.4(d)(1).
 - b. If BOEM determines any of the properties affected are eligible for inclusion in the National Register, and the SHPO or THPO if on tribal lands, agrees, and if it is determined that there will be effects to historic properties, BOEM will follow 36 CFR §800.5. Any adverse effects will be resolved by following 36 CFR §800.6 and 36 CFR §800.10 for National Historic Landmarks.
 - c. If a SHPO, or THPO if on tribal lands, disagrees with BOEM's determination regarding whether an affected property is eligible for inclusion in the National Register, or if the ACHP or the Secretary so request, the agency official shall obtain a determination of eligibility from the Secretary pursuant to 36 CFR Part 63 (36 CFR § 800.4(c)(2)).

III. Activities exempt from review. The signatories agree to exempt from Section 106 review the following categories of activities because they have little or no potential to affect a historic property's National Register qualifying characteristics:

- A. Archaeological Sampling: Vibracores or other direct samples collected, by or under the supervision of a Qualified Marine Archaeologist, for the purposes—at least in part—of historic property identification or National Register eligibility testing and evaluation.
- B. Meteorological Buoys: Proposed installation, operation, and removal of meteorological buoys when the results of geophysical data collected meet the standards established in BOEM's *Guidelines* and either: 1) resulted in the identification of no archaeological site within the seabed portion of the APE for the buoy, or 2) if the project can be relocated so that the APE does not contain an archaeological site, if any such sites are identified during geophysical survey. The signatories agree that offshore meteorological buoys have no effect on onshore historic properties since they are temporary in nature and indistinguishable from lighted vessel traffic.

- C. Meteorological Towers: Proposed construction, installation, operation, and removal of meteorological towers when the following conditions are met:
 - 1. The results of archaeological survey within the offshore APE meet the standards established in BOEM's *Guidelines* and either: 1) resulted in the identification of no archaeological site within the seabed portion of the APE for the tower, or 2) if the project can be relocated so that the offshore APE does not contain an archaeological site, if any such sites are identified during geophysical survey, and
 - 2. The applicant documents that there will be no potential for onshore visibility of the meteorological tower and therefore, no onshore APE or the results of historic property identification within the viewshed APE meet the standards outlined by the SHPO, or THPO if on tribal lands, and no historic properties are identified.

- IV. Tribal Consultation. BOEM shall continue to consult with affected Tribes throughout the implementation of this Agreement on subjects related to the undertakings in a government-to-government manner consistent with Executive Order 13175, Presidential memoranda, and the Department of the Interior's Policy on Consultation with Indian Tribes.

- V. Public Participation
 - A. Because BOEM and the signatories recognize the importance of public participation in the Section 106 process, BOEM shall continue to provide opportunities for public participation and shall consult with the signatories on possible approaches for keeping the public involved and informed throughout the term of this Agreement.
 - B. BOEM shall keep the public informed and may produce reports on historic properties and on the Section 106 process that may be made available to the public at BOEM's headquarters, on the BOEM website, and through other reasonable means insofar as the information shared conforms to the confidentiality clause of this Agreement.

- VI. Confidentiality. Because BOEM and the signatories agree that it is important to withhold from disclosure sensitive information such as that which is protected by NHPA Section 304 (16 U.S.C. §470w-3) (e.g., the location, character, and ownership of a historic resource, if disclosure would cause a significant invasion of privacy, risk harm to the historic resources, or impede the use of a traditional religious site by practitioners), BOEM shall:
 - A. Request that each signatory inform the other signatories if, by law, regulation or policy, it is unable to withhold sensitive data from public release.
 - B. Arrange for the signatories to consult as needed on how to protect such information collected or generated under this Agreement.

- C. Follow, as appropriate, 36 CFR §800.11(c) for authorization to withhold information pursuant to NHPA Section 304, and otherwise withhold sensitive information to the extent allowable by laws including the Freedom of Information Act, 5 U.S.C. §552, through the Department of the Interior regulations at 43 CFR Part 2.
- D. Request that the signatories agree that materials generated during consultation be treated by the signatories as internal and pre-decisional until they are formally released, although the signatories understand that they may need to be released by one of the signatories if required by law.

VII. Administrative Stipulations

- A. In coordinating reviews, BOEM shall follow this process:
 - 1. **Standard Review:** The signatories shall have a standard review period of thirty (30) calendar days for commenting on all documents which are developed under the terms of this Agreement, from the date they are received by the signatory. This includes technical reports of historic property identification and eligibility determinations, as well as agency findings.
 - 2. **Expedited Request for Review:** The signatories recognize the time-sensitive nature of this work and shall attempt to expedite comments or concurrence when BOEM so requests. No request for expedited review shall be less than fifteen (15) calendar days.
 - 3. If a signatory cannot meet BOEM's expedited review period request, it shall notify BOEM in writing within fifteen (15) calendar days.
 - 4. If a signatory fails to provide comments or respond within the time frame requested by BOEM (either standard or expedited), then BOEM may proceed as though it received concurrence. BOEM shall consider all comments received within the review period.
 - 5. Unless otherwise indicated below, all signatories will send correspondence and materials for review via electronic media or an alternate method specified by a signatory for a particular review. Should BOEM transmit the review materials by the alternate method, the review period will begin on the date the materials were received by the signatory, as confirmed by delivery receipt. All submissions to NY SHPO must be submitted via Cultural Resources Information System (CRIS) online submission system. All submissions to NJ SHPO must be submitted via hardcopy or, if the document(s) are extremely large, by electronic media.
 - 6. Each signatory shall designate a point of contact for carrying out this Agreement and provide this contact's information to the other signatories, updating it as necessary while this Agreement is in force. Updating a

point of contact alone shall not necessitate an amendment to this Agreement.

- B. **Dispute Resolution.** Should any signatory object in writing to BOEM regarding an action carried out in accordance with this Agreement, or lack of compliance with the terms of this Agreement, the signatories shall consult to resolve the objection. Should the signatories be unable to resolve the disagreement, BOEM shall forward its background information on the dispute as well as its proposed resolution of the dispute to the ACHP. Within forty-five (45) calendar days after receipt of all pertinent documentation, the ACHP shall either: (1) provide BOEM with written recommendations, which BOEM shall take into account in reaching a final decision regarding the dispute; or (2) notify BOEM that it shall comment pursuant to 36 CFR §800.7(c), and proceed to comment. BOEM shall take this ACHP comment into account, in accordance with 36 CFR §800.7(c)(4). Any ACHP recommendation or comment shall be understood to pertain only to the subject matter of the dispute; BOEM's responsibility to carry out all actions under this Agreement that is not subjects of dispute shall remain unchanged.
- C. **Amendments.** Any signatory may propose to BOEM in writing that this Agreement be amended, whereupon BOEM shall consult with the signatories to consider such amendment. This Agreement may then be amended when agreed to in writing by all signatories, becoming effective on the date that the amendment is executed by the ACHP as the last signatory.
- D. **BOEM shall prepare an annual report that will summarize actions taking place between October 1st and September 30th and make this report available to Signatories and Concurring Parties by December 31st of each year this Agreement is in effect. The annual report will summarize any activities exempted from review under this Section, as well as any other actions taken to implement the terms of this Agreement.**
- E. **Coordination with other Federal agencies.** In the event that another Federal agency believes it has Section 106 responsibilities related to the undertakings which are the subject of this Agreement, BOEM will request to coordinate its review with those other agencies. Additionally, that agency may attempt to satisfy its Section 106 responsibilities by agreeing in writing to the terms of this Agreement and notifying and consulting with the SHPO, THPO or tribal designee, and the ACHP. Any modifications to this Agreement that may be necessary for meeting that agency's Section 106 obligations shall be considered in accordance with this Agreement.
- F. **Adding Concurring Parties.** In the event that another party wishes to assert its support of this Agreement, that party may prepare a letter indicating its concurrence, which BOEM will attach to this Agreement and circulate among the signatories.

G. Terms of Agreement.

1. This Agreement shall remain in full force for twenty-five (25) years from the date this Agreement is executed, defined as the date the last signatory signs, unless otherwise extended by amendment in accordance with this Agreement. The term is related to the expected length of operations of commercial leases, which is given at 30 CFR §585.235.
2. The signatories agree to meet every five (5) years, beginning from the date the Agreement is executed, to discuss the Agreement, to determine whether amendment or termination is necessary, and to evaluate the adequacy of information exchange between the parties.

H. Termination.

1. If any signatory determines that the terms of this Agreement cannot be carried out or are not being carried out, that signatory shall notify the other signatories in writing and consult with them to seek amendment of the Agreement. If within sixty (60) calendar days of such notification, an amendment cannot be made, any signatory may terminate the Agreement upon written notice to the other signatories.
2. If termination is occasioned by BOEM's final decision on the last Plan considered under the Renewable Energy Regulations, BOEM shall notify the signatories and the public, in writing.

I. Anti-Deficiency Act. Pursuant to 31 U.S.C. §1341(a)(1), nothing in this Agreement shall be construed as binding the United States to expend in any one fiscal year any sum in excess of appropriations made by Congress for this purpose, or to involve the United States in any contract or obligation for the further expenditure of money in excess of such appropriations.

J. Existing Law and Rights. Nothing in this Agreement shall abrogate existing laws or the rights of any consulting party or signatory to this Agreement.

APPENDIX
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

Commercial lease means a lease, issued under the renewable energy regulations, that specifies the terms and conditions under which a person can conduct commercial activities (*see* 30 CFR §585.112);

Commercial activities mean, for renewable energy leases and grants, all activities associated with the generation, storage, or transmission of electricity or other energy products from a renewable energy project on the Outer Continental Shelf (OCS), and for which such electricity or other energy product is intended for distribution, sale, or other commercial use, except for electricity or other energy products distributed or sold pursuant to technology-testing activities on a limited lease. This term also includes activities associated with all stages of development, including initial site characterization and assessment, facility construction, and project decommissioning (*see* 30 CFR §585.112);

Limited lease means a lease, issued under the renewable energy regulations, that specifies the terms and conditions under which a person may conduct activities on the OCS that support the production of energy, but do not result in the production of electricity or other energy products for sale, distribution, or other commercial use exceeding a limit specified in the lease (*see* 30 CFR §585.112);

Research lease means an OCS lease, Right-of-Way (ROW) grant, and/or Right-of-Use (RUE) grant, issued under the renewable energy regulations at 30 CFR §585.238, to a Federal agency or a state for renewable energy research activities that support the future production, transportation, or transmission of renewable energy;

ROW grant means an authorization issued under the renewable energy regulations to use a portion of the OCS for the construction and use of a cable or pipeline for the purpose of gathering, transmitting, distributing, or otherwise transporting electricity or other energy product generated or produced from renewable energy. A ROW grant authorizes the holder to install on the OCS cables, pipelines, and associated facilities that involve the transportation or transmission of electricity or other energy products from renewable energy projects (*see* 30 CFR §585.112);

RUE grant means an easement issued under the renewable energy regulations that authorizes use of a designated portion of the OCS to support activities on a lease or other use authorization for renewable energy activities. A RUE grant authorizes the holder to construct and maintain facilities or other installations on the OCS that support the production, transportation, or

transmission of electricity or other energy products from any renewable energy resource (*see* 30 CFR §585.112);

Geotechnical testing means the process by which site-specific sediment and underlying geologic data are acquired from the seafloor and the sub-bottom and includes, but is not limited to, such methods as borings, vibracores, and cone penetration tests;

Geophysical survey means a marine remote-sensing survey using, but not limited to, such equipment as side-scan sonar, magnetometer, shallow and medium (seismic) penetration sub-bottom profiler systems, narrow beam or multibeam echo sounder, or other such equipment employed for the purposes of providing data on geological conditions, identifying shallow hazards, identifying archaeological resources, charting bathymetry, and gathering other site characterization information;

Historic property means any pre-contact or historic period district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (*see* 36 CFR §800.16(l)(1));

Tribal land means all lands within the exterior boundaries of any Indian reservation and all dependent Indian communities (*see* 36 CFR §800.16(x));

Qualified marine archaeologist means a person who meets the Secretary of the Interior's Professional Qualification Standards for Archaeology (48 FR 44738-44739), and has experience analyzing marine geophysical data;

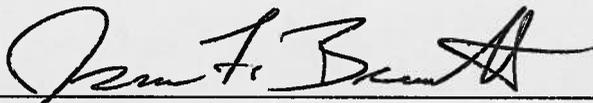
Qualified architectural historian means a person who meets the Secretary of the Interior's Professional Qualification Standards for architectural history (48 FR 44738-44739), and has experience analyzing structures, historic districts, and landscapes.

AGREED

Execution of this Agreement by BOEM, the SHPOs, and the ACHP, and the implementation of its terms are evidence that BOEM has fulfilled its responsibilities pursuant to Section 106 of the National Historic Preservation Act.

SIGNATORIES

U.S. Department of the Interior, Bureau of Ocean Energy Management

By: 

Date: April 19, 2016

James F. Bennett
Chief, Office of Renewable Energy Programs
Bureau of Ocean Energy Management

State Historic Preservation Office, New York State Parks

By:

Ruth Pierpont

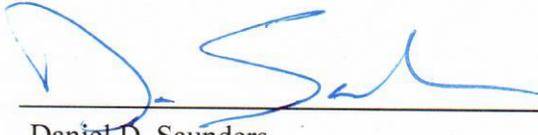
Date:

5/20/16

Ruth Pierpont
Deputy State Historic Preservation Office
New York State Parks, Recreation and Historic
Preservation

State Historic Preservation Office, State of New Jersey

By:



Date:

5/6/2016

Daniel D. Saunders
Deputy State Historic Preservation Officer
State Historic Preservation Office
State of New Jersey

Invited Signatory: Shinnecock Indian Nation

By:

Date:

[NAME]

[TITLE]

Shinnecock Indian Nation

Advisory Council on Historic Preservation

By: John M. Fowler Date: 6/3/16
John M. Fowler
Executive Director
Advisory Council on Historic Preservation

NYSERDA, a public benefit corporation, offers objective information and analysis, innovative programs, technical expertise, and support to help New Yorkers increase energy efficiency, save money, use renewable energy, and reduce reliance on fossil fuels. NYSERDA professionals work to protect the environment and create clean-energy jobs. NYSERDA has been developing partnerships to advance innovative energy solutions in New York State since 1975.

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NYSERDA

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Andrew M. Cuomo, Governor

New York State Energy Research and Development Authority
Richard L. Kauffman, Chair | Alicia Barton, President and CEO