Vineyard Wind Project: Summary of Cultural Resources Investigations

Summary Prepared By: Justin Bedard, Andrew DeWitt, Christine Davis (Environmental Resources Management [ERM])

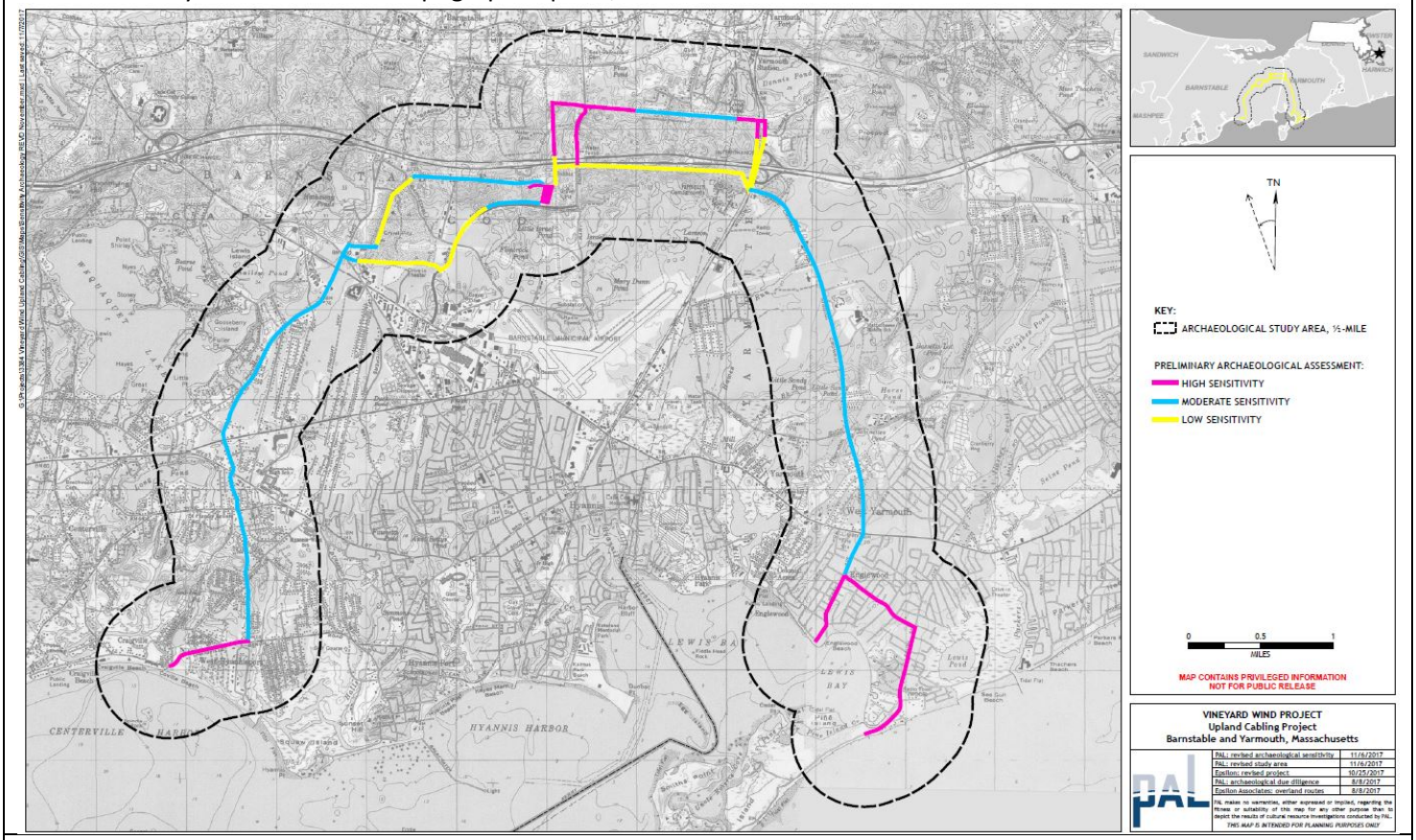
Report Title: Upland Cabling Routes: Archaeological Due Diligence Report	**Performing Organization:** The Public Archaeology Laboratory, Inc. (PAL). 26 Main Street, Pawtucket, Rhode Island 02860

Report Date: November 16, 2017

Report Summary: PAL performed an archaeological due diligence review of known archaeological sites within 0.5 mile of the Vineyard Wind Preferred Alternative (PR) and Noticed Alternative (NA) Upland Cable Routes, as well within 0.5 mile of six variants and one substation parcel, in Barnstable and Yarmouth. The purpose of the study was to provide Vineyard Wind with information about known archaeological sites within 0.5 mile of the routes and make recommendations regarding the need for consultation with the Massachusetts Historical Commission (MHC) and additional cultural resource management investigations. PAL performed the due diligence through a review of the Assets of the Commonwealth (MHC Inventory) and the Massachusetts Cultural Resource Information System (MACRIS) to identify previously recorded archaeological sites within the vicinity of the proposed Vineyard Wind Upland Cabling Project (the Project). PAL established a broad study area to provide information about the types, nature, and distribution of cultural resources located within the Project area. For archaeological resources, the study area encompassed 0.5 mile on either side of the Project centerline for a total width of 1 mile.

The results of PAL's study demonstrated that the Project area contains no archaeological properties listed on the National Register of Historic Places (NRHP). Previous cultural resources investigations have identified 29 precontact archaeological sites and two postcontact archaeological sites within the study area. Of these, six precontact sites and one Woodland-to-Contact Period site may be located within and/or adjacent to the overland routes. The PAL study identified 20 previous archaeological surveys within portions of the study area. In reviewing the results of the due diligence, PAL determined that the Project area had extensive areas of moderate to high archaeological sensitivity based on known information for similar environmental settings, such as proximity to water and sandy-well drained soils, and proximity to recorded archaeological sites.

Cultural Resources Investigation Map: Preliminary Sensitivity Assessment of the Vineyard Wind Upland Cabling Project on the USGS Hyannis and Dennis topographic quads, 7.5 minute series



Report Recommendations: PAL recommended consultation with the MHC on the potential for the Project to affect undiscovered archaeological sites that may be present in areas of moderate to high archaeological sensitivity.

Report Title: Archaeological Reconnaissance Survey: Vineyard Wind Upland Cabling Project, Barnstable and Yarmouth, Massachusetts	**Performing Organization:** The Public Archaeology Laboratory, Inc. (PAL). 26 Main Street, Pawtucket, Rhode Island 02860
Report Author(s): Duncan Ritchie	**Report Date:** May 2018 (Revised September 2018)

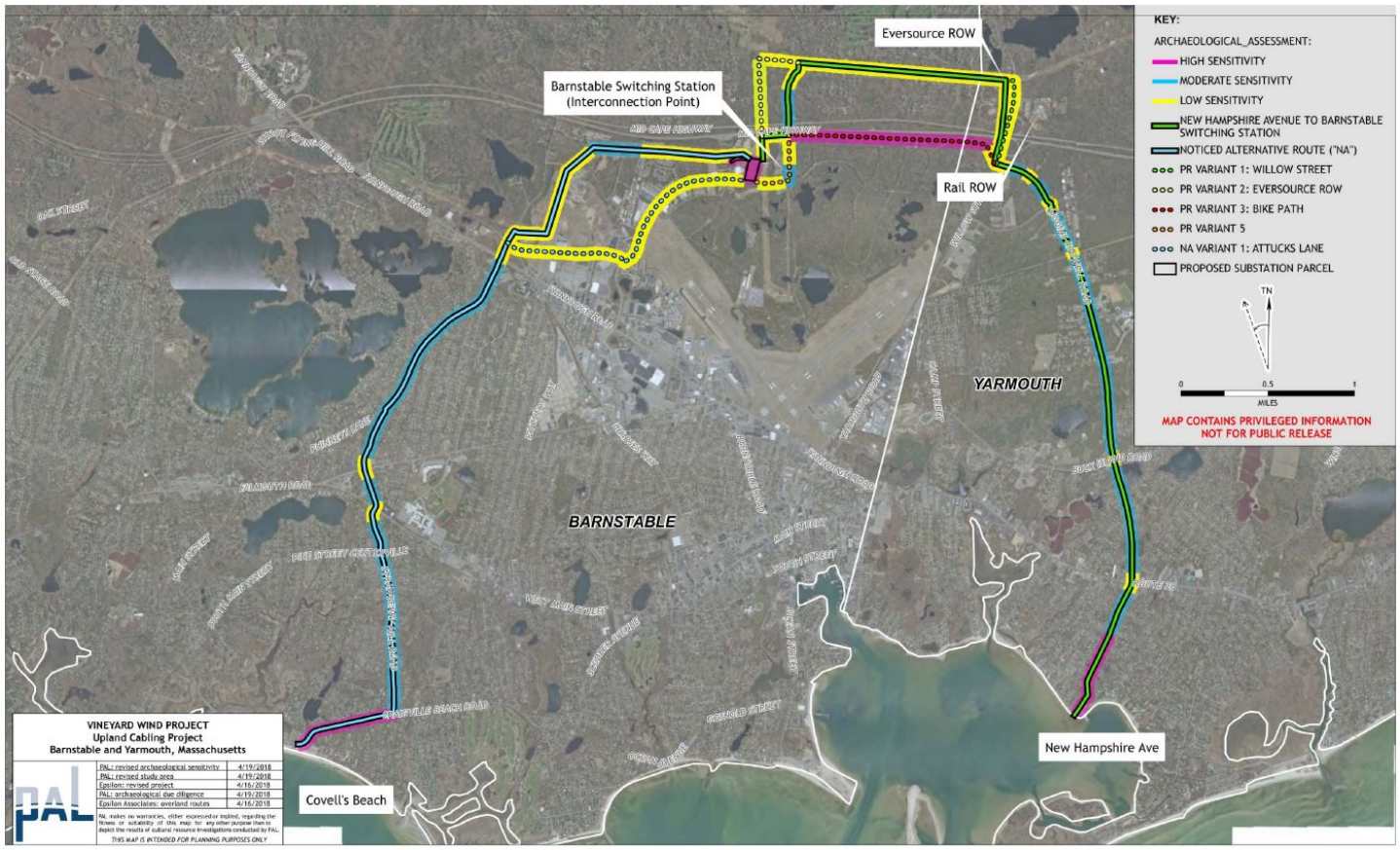
Report Summary: PAL performed an archaeological reconnaissance survey for the proposed Vineyard Wind Upland Cabling Project in Barnstable and Yarmouth, Massachusetts. At the time of the survey, the proposed Project included two primary routes (the PR and an NA Route), four PR variants (Variants 1, 2, 3 and 5), one NA variant (Variant 1), and a substation. During a previous due diligence study, PAL determined that the Project area had a relatively high potential for containing precontact Native American archaeological resources due to its location in the coastal zone and a section of the interior terminal moraine zone with freshwater ponds and wetlands. PAL also determined that the Project area had a high potential for containing postcontact archaeological resources due to its location within zones of seventeenth-century to Modern Period settlement in Barnstable and West Yarmouth.

PAL conducted archival research on previous cultural resources investigations and recorded archaeological sites within 0.5 mile of the Project area during the earlier archaeological due diligence study. PAL also performed an archaeological reconnaissance or "walkover" survey of the Project area. PAL used the information collected during the archival research and walkover survey to develop a predictive model of potential site types and their cultural and temporal affiliations. The predictive model considered various criteria to rank the potential for the Project area to contain terrestrial archaeological sites. Criteria incorporated into the predictive model included proximity of recorded and documented sites, local land use history, environmental data, and existing conditions. PAL stratified the Project area into zones of expected archaeological sensitivity (low and high) to determine which areas to investigate.

PAL's predictive model identified areas of high and medium archaeological sensitivity within the following sections of the Project area:

- The southern end of the PR is sensitive for unmarked precontact or Contact Period Native American burials given its proximity to a previously recorded Native American shell midden archaeological site.
- The southern end of the NA Route is sensitive for unmarked Native American burials due to the proximity of three Native American archaeological sites.
- A 1.2-mile (2-kilometer) section of PR Variant 3 was determined to be another zone of high archaeological sensitivity based on the results of the survey.
- A 2.6-mile (3.2-kilometer) section of the PR along Higgins Crowell Road and 2.7 miles (4.3 kilometers) of the NA Route along Strawberry Hill Road and Wequaquet and Phinneys lanes were determined to be located in areas of moderate archaeological sensitivity.
- At the northern end of the PR, an approximately 1,200-foot (360-meters) long zone of moderate sensitivity extends along Mary Dunn Road north of the Route 6 highway corridor.
- A section of PR Variant 5 along Mary Dunn Road about 500-feet (150-meters) long is another zone of moderate sensitivity.
- A small zone of moderate sensitivity approximately 1,300-feet (390-meters) long is in the northern portion of the NA Route from Kidds Hill Road east to the Shepley Wood Product and Golden Crown Cleaners properties.

Cultural Resources Investigation Map: Archaeological Sensitivity Assessment Based on the Results of the Archaeological Reconnaissance Survey and Predictive Model



Report Recommendations: PAL made the following recommendations based on the results of the predictive model and archaeological reconnaissance survey:

- Archaeological monitoring of Project construction activities within the staging areas for the horizontal directional drill or open trenching in the landfall area and during installation of upland cable within the identified zones of high and moderate archaeological sensitivity along existing roads in the Project area;
- An intensive archaeological survey at the proposed substation at the Barnstable Switching Station, which is located in an area of high archaeological sensitivity; and
- Depending on which route is selected for the proposed upland cabling, intensive archaeological surveys for the section of PR Variant 3 with high archaeological sensitivity; and a section of moderate sensitivity in the NA Route from Kidds Hill Road east to the Shepley Wood Products and Golden Crown Cleaners properties.

Report Title: Intensive Archaeological Survey: Proposed Substation Vineyard Wind Upland Cabling Project	**Performing Organization:** The Public Archaeology Laboratory, Inc. (PAL). 26 Main Street, Pawtucket, Rhode Island 02860
Report Author(s): Duncan Ritchie	**Report Date:** December 21, 2018

Report Summary: PAL performed an intensive archaeological survey within the location of a proposed substation at the Barnstable Switching Station for the Project. The proposed substation would be located on a 6.35-acre parcel of land on Independence Drive within the Independence Park commercial/industrial area in Barnstable and Yarmouth, Massachusetts. The proposed substation would be adjacent to the existing Eversource 115-kilovolt Barnstable Switching Station. During the course of previous archaeological studies for the Project, PAL identified the proposed substation location as an area of high archaeological sensitivity due to the presence of 13 precontact archaeological sites; one Contact Period site; and a Native American trail corresponding to the present route of Mary Dunn Road within 0.5 mile of the substation parcel. As a result, PAL recommended an intensive archaeological survey of the substation area due to its location in a high sensitivity archaeological zone.

PAL excavated 64, 19.68-by-19.68 inch (50-by-50 centimeter) test pits within the Project area during the intensive archaeological survey. PAL excavated 54 test pits along 4 survey transects and 10 test pits at selected locations. PAL archaeologists recovered precontact Native American artifacts at two test pits locations. The finds consisted of a small stemmed projectile point made from quartz and a single piece of quartz chipping debris. The small stemmed point is of Late to Transitional Archaic (5000-2500 Before Present [B.P.]) or Early Woodland Period (2500-1600 B.P.) age. PAL excavated additional, close-interval test pits around the two find locations but did not recover any additional artifacts from these test pits. Due to the isolated nature of the finds, PAL recommended that neither find was a potentially significant cultural resource.

Cultural Resources Investigation Map: Location of Preferred and Alternate Routes, Route Variants, and the Proposed Substation

Report Recommendations: PAL recommended no additional archaeological investigation of the proposed substation at the Barnstable Switching Station.

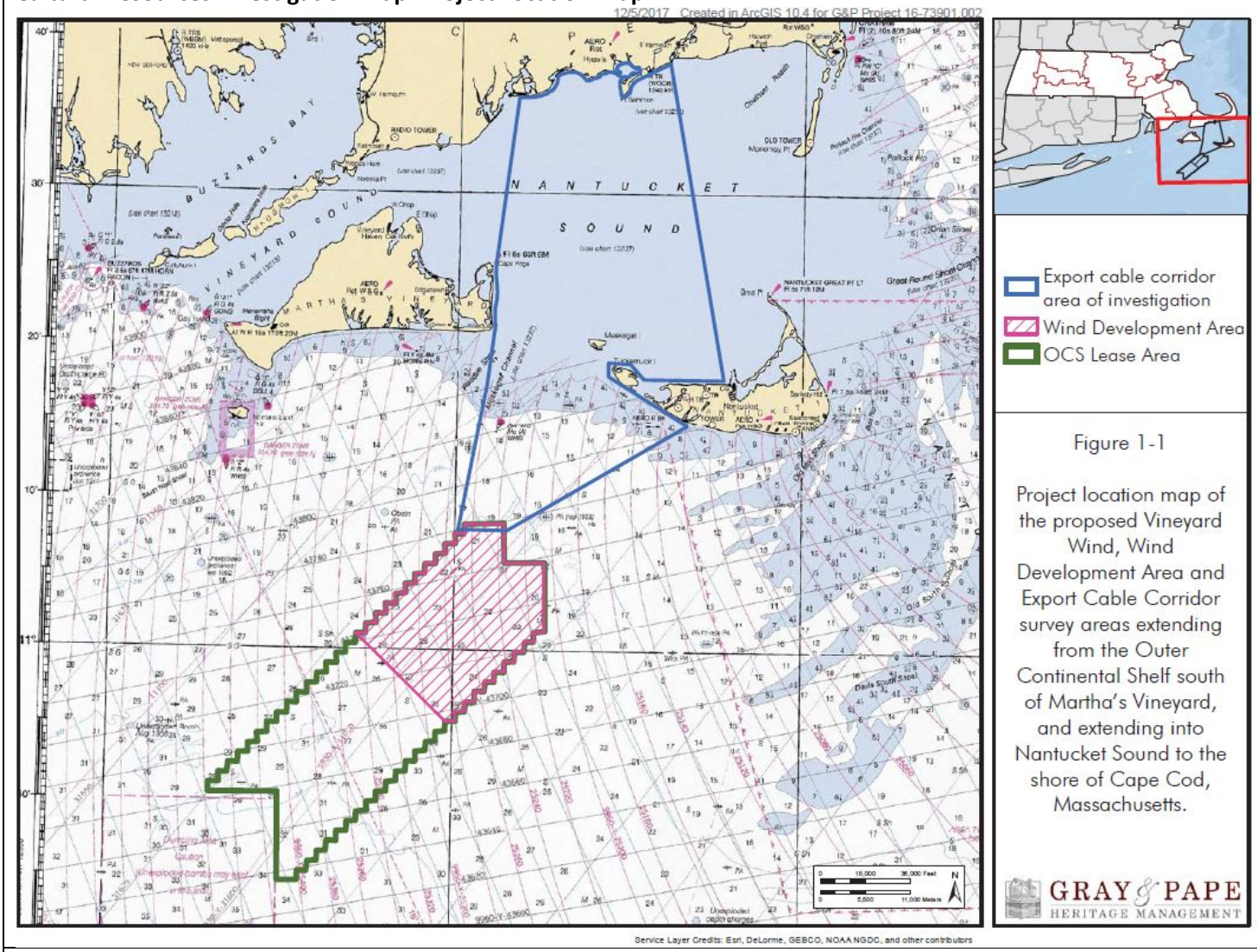
Report Title: Marine Archaeological Services in Support of the Vineyard Wind Offshore Wind Energy Project Construction and Operations Plan OCS-A 0501 Lease Area and Export Cable Corridors Offshore Massachusetts	**Performing Organization:** Gray & Pape, Inc., 60 Valley Street, Suite 103 Providence, Rhode Island 02909
Report Authors: Michael C. Tuttle, Christopher Donta, and Nathan Scholl	**Report Date:** March 13, 2018

Report Summary: Gray & Pape provided archaeological support for a high-resolution geophysical (HRG) and geotechnical marine survey of a proposed Wind Development Area (WDA) and Offshore Export Cable Corridors (OECCs) for Vineyard Wind's Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0501) area south of Martha's Vineyard to a number of potential landfalls on Cape Cod, Massachusetts. This report summarizes the analysis conducted by Gray and Pape based on survey data collected over the 2016 and 2017 seasons.

The HRG surveys utilized a magnetometer, side scan sonar, two types of sub-bottom profiler, and multibeam sonar. Vineyard Wind's offshore remote sensing survey subcontractors surveyed the WDA along multiple parallel and perpendicular survey tracks arranged in order to examine over 772 miles (1,243 kilometers). For the OECCs, the survey vessel followed tracklines along several alignments to examine potential corridors, and surveyed along additional tracklines in special, sensitive, and/or unique areas. As a result, the HRG surveys examined over 154 miles (249 kilometers) of tracklines in the OECCs.

The surveys located one potential shipwreck site in the WDA as well as occasional isolated debris and fishing gear along with numerous natural features such as boulders and sand ripples and waves. Sub-bottom profiler data indicated that the sub-seabed was variable along the numerous miles of survey in the WDA and OECCs. The surveys did not recover any direct evidence of precontact Native American archaeological materials within the survey areas. The geophysical and geotechnical surveys did, however, provide information on the depth of the Pleistocene/Holocene interface and provided organic material for sampling. The data from the WDA samples indicated that, prior to the earliest scientifically documented human occupation of southern New England, much of the WDA was above water. Data from the OECCs indicate that portions of the OECC corridors were exposed landforms during the Pleistocene and Holocene geologic periods and could have supported Native American populations during the late Paleoindian through Archaic periods (12,500-3,000 B.P.).

Cultural Resources Investigation Map: Project Location Map



Report Recommendations: Gray and Pape characterized their conclusions and recommendations in the report as a preliminary assessment based on reconnaissance level activities. Gray and Pape planned to submit a revised report containing a final archaeological assessment subsequent to the completion of the planned 2018 survey field effort (see below).

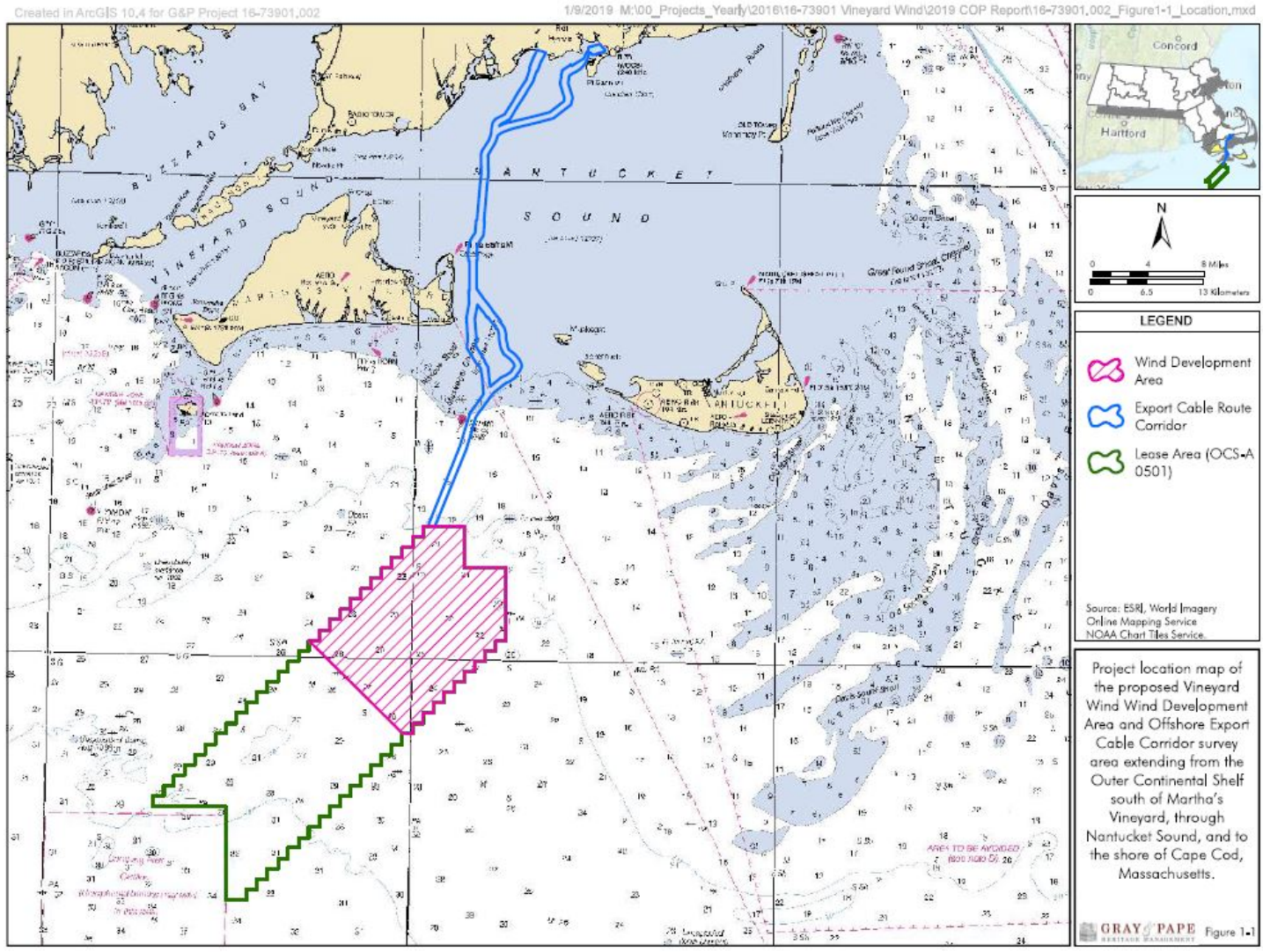
Report Title: Marine Archaeological Services in Support of the Vineyard Wind Offshore Wind Energy Project Construction and Operations Plan for Lease Area OCS-A 0501 and Offshore Export Cable Corridor Offshore Massachusetts	**Performing Organization:** Gray & Pape, 60 Valley Street, Suite 103, Providence, Rhode Island 02909
Report Authors: Michael C. Tuttle, Sarah E. Holland, Nathan Scholl, and Kimberly Smith	**Report Date:** March 18, 2019

Report Summary: Gray & Pape provided archaeological support for HRG and geotechnical marine surveys of the proposed Vineyard WDA and OECC. Vineyard Wind conducted the surveys in support of their Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (Lease Area OCS-A 0501), south of Martha's Vineyard, to potential landfalls on Cape Cod, Massachusetts. Gray & Pape conducted the study over the 2016, 2017, and 2018 field seasons. The goal of the study was to assist Vineyard Wind and the Bureau of Ocean Energy Management in determining whether potentially significant cultural resources are present in the Project Area.

During the initial marine surveys in 2016, multiple parallel and perpendicular survey tracklines were run in a strategic pattern to examine the WDA, covering over 432 nautical miles (800 kilometers). For the OECC survey in 2017, single survey tracklines were surveyed to examine potential corridors, and additional survey lines were added in special, sensitive, and/or unique areas covering approximately 156.5 nautical miles (290 kilometers). During the 2018 survey, Vineyard Wind conducted a comprehensive survey in both the WDA and OECC. Over 2,597 nautical miles (4,810 kilometers) were run in the WDA and over 2,878 nautical miles (5,330 kilometers) were run along the OECC. Field investigations included a marine HRG survey utilizing magnetometer, side-scan sonar, sub-bottom profiler, and multibeam echosounder. In addition, Vineyard Wind performed geotechnical explorations including bottom grabs, cone penetration tests), bores and/or vibracores in the WDA and along the OECC.

The geophysical surveys identified two shipwrecks in the WDA and another five possible shipwreck sites in the OECC. In addition to these historic cultural resources, the surveys identified potentially intact formerly exposed landforms, referred to as paleolandforms, in the WDA and OECC that could have supported human occupations during the Paleoindian and Archaic periods (12,500-3,000 B.P.). These buried and submerged paleolandforms would have been exposed and habitable during the Paleoindian through the middle to late Archaic cultural periods and, as a result, could contain Native American archaeological sites dating to these periods. Areas where such preserved former terrestrial landscape or landform features exist, however, make-up a small percentage of the overall Project area. The survey identified 35 paleolandform areas with the WDA and OECC: 17 of these paleolandforms are in the WDA and 18 are in the OECC.

Cultural Resources Investigation Map: Project Location Map



Report Recommendations: Gray & Pape recommended an avoidance buffer around each of the suspected seven shipwreck sites or scatter areas: A 164-foot (50-meter) buffer around the structurally intact shipwrecks and a buffer zone extending 328 feet (100 meters) beyond the identified bounds of the scatter areas, to include the imaged debris field. Gray & Pape also recommended avoidance of the interpreted paleolandforms in the Project area in all locations where these features exist within the anticipated depth of Project-related disturbance. If avoidance of identified potentially archaeological sensitive areas is not possible, Gray & Pape recommended additional investigations to further characterize and collect information to evaluate the areas' potential to contain archaeological deposits.