

# Supporting Attachments

Response to New York State Energy Research and Development Authority  
Request for Proposals ORECRFP22-1



**VINEYARD  
OFFSHORE**

# 4.0 Proposal Narrative

## Supporting Attachments

January 26, 2023

Submitted by



75 Arlington Street, 10<sup>th</sup> Floor  
Boston, MA 02116

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Certain information in this Submission is non-public, proprietary, commercial, and/or financial information and has been redacted from the version of this Submission marked "PUBLIC." Vineyard Offshore has submitted a confidential version of this Submission, marked "CONFIDENTIAL", which includes redacted information, and which should be treated as a non-public record that is exempt from disclosure under New York State law and as set forth in the ORECRFP22-1 Request for Proposals issued July 27, 2022, and revised on November 4, 2022, and December 23, 2022.

PUBLIC

## **CONFIDENTIALITY STATEMENT**

As contemplated under Sections 6.2.2 and 8.1 of the Request for Proposals ORECRFP22-1 issued July 27,2022 and as further described in the Attachment 1–Statement and Request for Confidential Treatment included with Vineyard Offshore’s cover letter dated January 26, 2023 (the “Cover Letter”), certain information in this document or electronic file and the appendices listed below, each of which forms a part of this proposal, is non-public, confidential and proprietary information including commercial and financial information and trade secrets (as further defined in the Cover Letter, “Confidential Information”). Vineyard Offshore intends for all such Confidential Information to remain confidential and be treated as such by NYSERDA and the Scoring Committee. Under the New York Public Officers Law, Article 6, the New York State Freedom of Information Law and NYSERDA’s implementing regulations under 21 NYCRR Part 501, the Confidential Information contained in this proposal is not a public record and is exempt from public records requests. Confidential Information has been redacted from this Submission and/or is clearly marked “CONFIDENTIAL.”



**Attachment To:**

**Section 3 - Proposer Qualifications**

**ATTACHMENT 3-1**

**REDACTED**



**Attachment To:**

**Section 3 - Proposer Qualifications**

**ATTACHMENT 3-2**

**REDACTED**



**Attachment To:**

**Section 3 - Proposer Qualifications**

**ATTACHMENT 3-3**

**REDACTED**



**Attachment To:**

**Section 3 - Proposer Qualifications**

**ATTACHMENT 3-4**

**REDACTED**



**Attachment To:**

**Section 3 - Proposer Qualifications**

**ATTACHMENT 3-5**

**REDACTED**





**Attachment To:**

**Section 3 - Proposer Qualifications**

**ATTACHMENT 3-6**

**REDACTED**

VINEYARD  OFFSHORE

**Attachment To:**

**Section 4 - Project Description and Site Control**

**ATTACHMENT 4-1**

**REDACTED**

**Attachment To:**

**Section 4 - Project Description and Site Control**

**ATTACHMENT 4-2**

**REDACTED**



**Attachment To:**

**Section 4 - Project Description and Site Control**

**ATTACHMENT 4-3**

**BOEM LEASE FOR OCS-A 0544**



# United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT  
WASHINGTON, DC 20240-0001

APR 28 2022

## NOTICE

Vineyard Mid-Atlantic LLC  
412 West 15th Street, 15th Floor  
New York, New York 10011

: BOEM Company No. 15118  
:  
:  
:

### Change of Name Recognized

Acceptable evidence has been received in this office concerning the change of name from Mid-Atlantic Offshore Wind LLC to Vineyard Mid-Atlantic LLC. The name change was effective as of April 6, 2022, the date filed with the Secretary of State of the State of Delaware. All Bureau of Ocean Energy Management (BOEM) records have been updated to reflect the new company name. A copy of your updated BOEM Qualification Card, reflecting the new company name, is enclosed for your records.

For further information concerning this Notice, please contact Ms. Gina Best at (703) 787-1341 or [gina.best@boem.gov](mailto:gina.best@boem.gov).

DAVID  
MACDUFFEE  
Digitally signed by DAVID  
MACDUFFEE  
Date: 2022.04.28  
15:47:15 -04'00'

David MacDuffee  
Chief, Projects and Coordination Branch  
Office of Renewable Energy Programs

Enclosure

PUBLIC



# United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT  
WASHINGTON, DC 20240-0001

APR 28 2022

Mr. Henrik Tordrup  
Mid-Atlantic Offshore Wind LLC  
412 West 15<sup>th</sup> Street, 15<sup>th</sup> Floor  
New York, New York 10011

Dear Mr. Tordrup:

Please find enclosed one fully executed copy of Mid-Atlantic Offshore Wind LLC's (Company Number: 15118) commercial lease OCS-A 0544. The lease comprises approximately 43,056 acres lying in the New York Bight and will become effective May 1, 2022.

Please do not hesitate to contact Ms. Gina Best at (703) 787-1341 or [gina.best@boem.gov](mailto:gina.best@boem.gov) if you have any questions.

Sincerely,

James F. Bennett  
Program Manager  
Office of Renewable Energy Programs

Enclosure

PUBLIC

APR 11 2022



UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF OCEAN ENERGY MANAGEMENT  <b>COMMERCIAL LEASE OF                  SUBMERGED LANDS FOR                  RENEWABLE ENERGY DEVELOPMENT                  ON THE                  OUTER CONTINENTAL SHELF</b>  <i>Paperwork Reduction Act of 1995 statement: This form does not constitute an information collection as defined by 44 U.S.C. § 3501 et seq. and therefore does not require approval by the Office of Management and Budget.</i>	Office of Renewable Office Energy Programs  Sterling, VA	Renewable Energy Lease Number  OCS-A 0544
	Cash Bonus and/or Acquisition Fee \$285,000,000.00	Resource Type  Wind
	Effective Date  May 1, 2022	Block Number(s)  See Addendum A

This lease, which includes any addenda hereto, is hereby entered into by and between the United States of America, ("Lessor"), acting through the Bureau of Ocean Energy Management ("BOEM"), its authorized officer, and

Lessee	Interest Held
Mid-Atlantic Offshore Wind LLC	100%

("Lessee"). This lease is effective on the date written above ("Effective Date") and will continue in effect until the lease terminates as set forth in Addendum "B." In consideration of any cash payment heretofore made by the Lessee to the Lessor and in consideration of the promises, terms, conditions, covenants, and stipulations contained herein and attached hereto, the Lessee and the Lessor agree as follows:

**Section 1: Statutes and Regulations.**

This lease is issued pursuant to subsection 8(p) of the Outer Continental Shelf Lands Act ("the Act"), 43 U.S.C. §§ 1331 *et seq.* This lease is subject to the Act and regulations promulgated pursuant to the Act, including but not limited to, offshore renewable energy and alternate use regulations at 30 CFR Part 585 as well as other applicable statutes and regulations in existence on the Effective Date of this lease. This lease is also subject to those statutes enacted (including amendments to the Act or other statutes) and regulations promulgated thereafter, except to the extent that they explicitly conflict with an express provision of this lease. It is expressly understood that amendments to existing statutes, including but not limited to the Act, and regulations may be made, and/or new statutes may be enacted or new regulations promulgated, which do not explicitly conflict with an express provision of this lease, and that the Lessee bears the risk that such amendments, regulations, and statutes may increase or decrease the Lessee's obligations under the lease.

**Section 2: Rights of the Lessee.**

- (a) The Lessor hereby grants and leases to the Lessee the exclusive right and privilege, subject to the terms and conditions of this lease and applicable regulations, to:

- (1) submit to the Lessor for approval a Site Assessment Plan (SAP) and Construction and Operations Plan (COP) for the project identified in Addendum “A” of this lease; and (2) conduct activities in the area identified in Addendum “A” of this lease (“leased area”) and/or Addendum “D” of this lease (“project easement(s)”), that are described in a SAP or COP that has been approved by the Lessor. This lease does not, by itself, authorize any activity within the leased area.
- (b) The rights granted to the Lessee herein are limited to those activities described in any SAP or COP approved by the Lessor. The rights granted to the Lessee are limited by the lease-specific terms, conditions, and stipulations required by the Lessor per Addendum “C.”
- (c) This lease does not authorize the Lessee to conduct activities on the Outer Continental Shelf (OCS) relating to or associated with the exploration for, or development or production of, oil, gas, other seabed minerals, or renewable energy resources other than those renewable energy resources identified in Addendum “A.”

### **Section 3: Reservations to the Lessor.**

- (a) All rights in the leased area and project easement(s) not expressly granted to the Lessee by the Act, applicable regulations, this lease, or any approved SAP or COP, are hereby reserved to the Lessor.
- (b) The Lessor will decide whether to approve a SAP or COP in accordance with the applicable regulations in 30 CFR Part 585. The Lessor retains the right to disapprove a SAP or COP based on the Lessor’s determination that the proposed activities would have unacceptable environmental consequences, would conflict with one or more of the requirements set forth in subsection 8(p)(4) of the Act (43 U.S.C. § 1337(p)(4)), or for other reasons provided by the Lessor pursuant to 30 CFR 585.613(e)(2) or 30 CFR 585.628(f)(2). Disapproval of plans will not subject the Lessor to liability under the lease. The Lessor also retains the right to approve with modifications a SAP or COP, as provided in applicable regulations.
- (c) The Lessor reserves the right to suspend the Lessee’s operations in accordance with the national security and defense provisions of Section 12 of the Act and applicable regulations.
- (d) The Lessor reserves the right to authorize other uses within the leased area and project easements(s) that will not unreasonably interfere with activities described in an approved SAP and/or COP, pursuant to this lease.

### **Section 4: Payments.**

- (a) The Lessee must make all rent payments to the Lessor in accordance with applicable regulations in 30 CFR Part 585, unless otherwise specified in Addendum “B.”
- (b) The Lessee must make all operating fee payments to the Lessor in accordance with applicable regulations in 30 CFR Part 585, as specified in Addendum “B.”

### **Section 5: Plans.**

The Lessee may conduct those activities described in Addendum “A” only in accordance with a SAP or COP approved by the Lessor. The Lessee may not deviate from an approved SAP or COP except as provided in applicable regulations in 30 CFR Part 585.



## **Section 6: Associated Project Easement(s).**

Pursuant to 30 CFR 585.200(b), the Lessee has the right to one or more project easement(s), without further competition, for the purpose of installing gathering, transmission, and distribution cables, pipelines, and appurtenances on the OCS, as necessary for the full enjoyment of the lease, and under applicable regulations in 30 CFR Part 585. As part of submitting a COP for approval, the Lessee may request that one or more easement(s) be granted by the Lessor. If the Lessee requests that one or more easement(s) be granted when submitting a COP for approval, such project easements will be granted by the Lessor in accordance with the Act and applicable regulations in 30 CFR Part 585 upon approval of the COP in which the Lessee has demonstrated a need for such easements. Such easements must be in a location acceptable to the Lessor, and will be subject to such conditions as the Lessor may require. The project easement(s) that would be issued in conjunction with an approved COP under this lease will be described in Addendum "D" to this lease, which will be updated as necessary.

## **Section 7: Conduct of Activities.**

The Lessee must conduct, and agrees to conduct, all activities in the leased area and project easement(s) in accordance with an approved SAP or COP, and with all applicable laws and regulations.

The Lessee further agrees that no activities authorized by this lease will be carried out in a manner that:

- (a) could unreasonably interfere with or endanger activities or operations carried out under any lease or grant issued or maintained pursuant to the Act, or under any other license or approval from any Federal agency;
- (b) could cause any undue harm or damage to the environment;
- (c) could create hazardous or unsafe conditions; or
- (d) could adversely affect sites, structures, or objects of historical, cultural, or archaeological significance, without notice to and direction from the Lessor on how to proceed.

## **Section 8: Violations, Suspensions, Cancellations, and Remedies.**

If the Lessee fails to comply with (1) any of the applicable provisions of the Act or regulations, (2) the approved SAP or COP, or (3) the terms of this lease, including associated Addenda, the Lessor may exercise any of the remedies that are provided under the Act and applicable regulations, including, without limitation, issuance of cessation of operations orders, suspension or cancellation of the lease, and/or the imposition of penalties, in accordance with the Act and applicable regulations.

The Lessor may also cancel this lease for reasons set forth in subsection 5(a)(2) of the Act (43 U.S.C. § 1334(a)(2)), or for other reasons provided by the Lessor pursuant to 30 CFR 585.437.

Non-enforcement by the Lessor of a remedy for any particular violation of the applicable provisions of the Act or regulations, or the terms of this lease, will not prevent the Lessor from exercising any remedy, including cancellation of this lease, for any other violation or for the same violation occurring at any other time.

## **Section 9: Indemnification.**

The Lessee hereby agrees to indemnify the Lessor for, and hold the Lessor harmless from, any claim caused by or resulting from any of the Lessee's operations or activities on the leased area or project easement(s) or arising out of any activities conducted by or on behalf of the Lessee or its employees, contractors (including Operator, if applicable), subcontractors, or their employees, under this lease, including claims for:

- a. loss or damage to natural resources,
- b. the release of any petroleum or any Hazardous Materials,
- c. other environmental injury of any kind,
- d. damage to property,
- e. injury to persons, and/or
- f. costs or expenses incurred by the Lessor.

Except as provided in any addenda to this lease, the Lessee will not be liable for any losses or damages proximately caused by the activities of the Lessor or the Lessor's employees, contractors, subcontractors, or their employees. The Lessee must pay the Lessor for damage, cost, or expense due and pursuant to this Section within 90 days after written demand by the Lessor. Nothing in this lease will be construed to waive any liability or relieve the Lessee from any penalties, sanctions, or claims that would otherwise apply by statute, regulation, operation of law, or could be imposed by the Lessor or other government agency acting under such laws.

"Hazardous Material" means

1. A "hazardous substance" or a "pollutant or contaminant" as defined by the *Comprehensive Environmental Response, Compensation, and Liability Act* at 42 U.S.C. §§ 9601(14) and (33);
2. Any "regulated substance" as defined by the Resource Conservation and Recovery Act ("RCRA") at 42 U.S.C. § 6991(7), whether or not contained in or released from underground storage tanks, and any hazardous waste regulated under RCRA pursuant to 42 U.S.C. §§ 6921 *et seq.*;
3. "Oil," as defined by the Clean Water Act at 33 U.S.C. § 1321(a)(1) and the Oil Pollution Act at 33 U.S.C. § 2701(23); or
4. Other substances that applicable Federal, state, tribal, or local laws define and regulate as "hazardous."

## **Section 10: Financial Assurance.**

The Lessee must provide and maintain at all times a surety bond(s) or other form(s) of financial assurance approved by the Lessor in the amount specified in Addendum "B." As required by the applicable regulations in 30 CFR Part 585, if, at any time during the term of this lease, the Lessor requires additional financial assurance, then the Lessee must furnish the additional financial assurance required by the Lessor in a form acceptable to the Lessor within 90 days after receipt of the Lessor's notice of such adjustment.

## **Section 11: Assignment or Transfer of Lease.**

This lease may not be assigned or transferred in whole or in part without written approval of the Lessor. The Lessor reserves the right, in its sole discretion, to deny approval of the Lessee's application to transfer or assign all or part of this lease. Any assignment will be effective on the date

the Lessor approves the Lessee's application. Any assignment made in contravention of this section is void.

#### **Section 12: Relinquishment of Lease.**

The Lessee may relinquish this entire lease or any officially designated subdivision thereof by filing with the appropriate office of the Lessor a written relinquishment application, in accordance with applicable regulations in 30 CFR Part 585. No relinquishment of this lease or any portion thereof will relieve the Lessee or its surety of the obligations accrued hereunder, including but not limited to, the responsibility to remove property and restore the leased area and project easement(s) pursuant to section 13 of this lease and applicable regulations.

#### **Section 13: Removal of Property and Restoration of the Leased Area and Project Easement(s) on Termination of Lease.**

Unless otherwise authorized by the Lessor, pursuant to the applicable regulations in 30 CFR Part 585, the Lessee must remove or decommission all facilities, projects, cables, pipelines, and obstructions and clear the seafloor of all obstructions created by activities on the leased area and project easement(s) within two years following lease termination, whether by expiration, cancellation, contraction, or relinquishment, in accordance with any approved SAP, COP, or approved Decommissioning Application, and applicable regulations in 30 CFR Part 585.

#### **Section 14: Safety Requirements.**

The Lessee must:

- a. maintain all places of employment for activities authorized under this lease in compliance with occupational safety and health standards and, in addition, free from recognized hazards to employees of the Lessee or of any contractor or subcontractor operating under this lease;
- b. maintain all operations within the leased area and project easement(s) in compliance with regulations in 30 CFR Part 585 and orders from the Lessor and other Federal agencies with jurisdiction, intended to protect persons, property and the environment on the OCS; and
- c. provide any requested documents and records, which are pertinent to occupational or public health, safety, or environmental protection, and allow prompt access, at the site of any operation or activity conducted under this lease, to any inspector authorized by the Lessor or other Federal agency with jurisdiction.

#### **Section 15: Debarment Compliance.**

The Lessee must comply with the Department of the Interior's non-procurement debarment and suspension regulations set forth in 2 CFR Parts 180 and 1400 and must communicate the requirement to comply with these regulations to persons with whom it does business related to this lease by including this requirement in all relevant contracts and transactions.

## **Section 16: Equal Opportunity Clause.**

During the performance of this lease, the Lessee must fully comply with paragraphs (1) through (7) of Section 202 of Executive Order 11246, as amended (reprinted in 41 CFR 60-1.4(a)), and the implementing regulations, which are for the purpose of preventing employment discrimination against persons on the basis of race, color, religion, sex, or national origin. Paragraphs (1) through (7) of Section 202 of Executive Order 11246, as amended, are incorporated in this lease by reference.

## **Section 17: Certification of Nonsegregated Facilities.**

By entering into this lease, the Lessee certifies, as specified in 41 CFR 60-1.8, that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. As used in this certification, the term "facilities" means, but is not limited to, any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees. Segregated facilities include those that are segregated by explicit directive or those that are in fact segregated on the basis of race, color, religion, sex, or national origin, because of habit, local custom, or otherwise; provided, that separate or single-user restrooms and necessary dressing or sleeping areas must be provided to assure privacy as appropriate. The Lessee further agrees that it will obtain identical certifications from proposed contractors and subcontractors prior to awarding contracts or subcontracts unless they are exempt under 41 CFR 60-1.5.

## **Section 18: Notices.**

All notices or reports provided from one party to the other under the terms of this lease must be in writing, except as provided herein and in the applicable regulations in 30 CFR Part 585. Written notices and reports must be delivered to the Lessee's or Lessor's Lease Representative, as specifically listed in Addendum "A," either electronically, by hand, by facsimile, or by United States first class mail, adequate postage prepaid. Each party must, as soon as practicable, notify the other of a change to their Lessee's or Lessor's Contact Information listed in Addendum "A" by a written notice signed by a duly authorized signatory and delivered by hand or United States first class mail, adequate postage prepaid. Until such notice is delivered as provided in this section, the last recorded contact information for either party will be deemed current for service of all notices and reports required under this lease. For all operational matters, notices and reports must be provided to the party's Operations Representative, as specifically listed in Addendum "A," as well as the Lease Representative.

## **Section 19: Severability Clause.**

If any provision of this lease is held unenforceable, all remaining provisions of this lease will remain in full force and effect.

**Section 20: Modification.**

Unless otherwise authorized by the applicable regulations in 30 CFR Part 585, this lease may be modified or amended only by mutual agreement of the Lessor and the Lessee. No such modification or amendment will be binding unless it is in writing and signed by duly authorized signatories of the Lessor and the Lessee.

Mid-Atlantic Offshore Wind LLC  
\_\_\_\_\_  
Lessee  
  
\_\_\_\_\_  
(Signature of Authorized Officer)  
Henrik Tordrup  
\_\_\_\_\_  
(Name of Signatory)  
President  
\_\_\_\_\_  
(Title)  
April 7, 2022  
\_\_\_\_\_  
(Date)

The United States of America  
\_\_\_\_\_  
Lessor  
  
\_\_\_\_\_  
(Signature of Authorized Officer)  
James F. Bennett  
\_\_\_\_\_  
(Name of Signatory)  
Program Manager, Office of  
Renewable Energy Programs  
\_\_\_\_\_  
(Title)  
April 28, 2022  
\_\_\_\_\_  
(Date)

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "A"**

DESCRIPTION OF LEASED AREA AND LEASE ACTIVITIES

Lease Number OCS-A 0544

I. Lessor and Lessee Contact Information

Lessee Company Number: 15118

(a) Lessor's Contact Information

	<b>Lease Representative</b>	<b>Operations Representative</b>
Title	Program Manager, Office of Renewable Energy Programs	Same as Lease Representative
Address	U.S. Department of the Interior Bureau of Ocean Energy Management 45600 Woodland Road Sterling, Virginia 20166	
Phone	(703) 787-1300	
Fax	(703) 787-1708	
Email	renewableenergy@boem.gov	

(b) Lessee's Contact Information

	<b>Lease Representative</b>	<b>Operations Representative</b>
Name	Henrik Tordrup	Henrik Tordrup
Title	President	President
Address	412 W 15th Street, 15th Floor New York, NY 10011	412 W 15th Street, 15th Floor New York, NY 10011
Phone	646-369-3006	646-369-3006
Fax		
Email	hto@cip.dk	hto@cip.dk

II. Description of Leased Area

The total acreage of the leased area is approximately 43,056 acres.

This area is subject to later adjustment, in accordance with applicable regulations (*e.g.*, contraction, relinquishment).

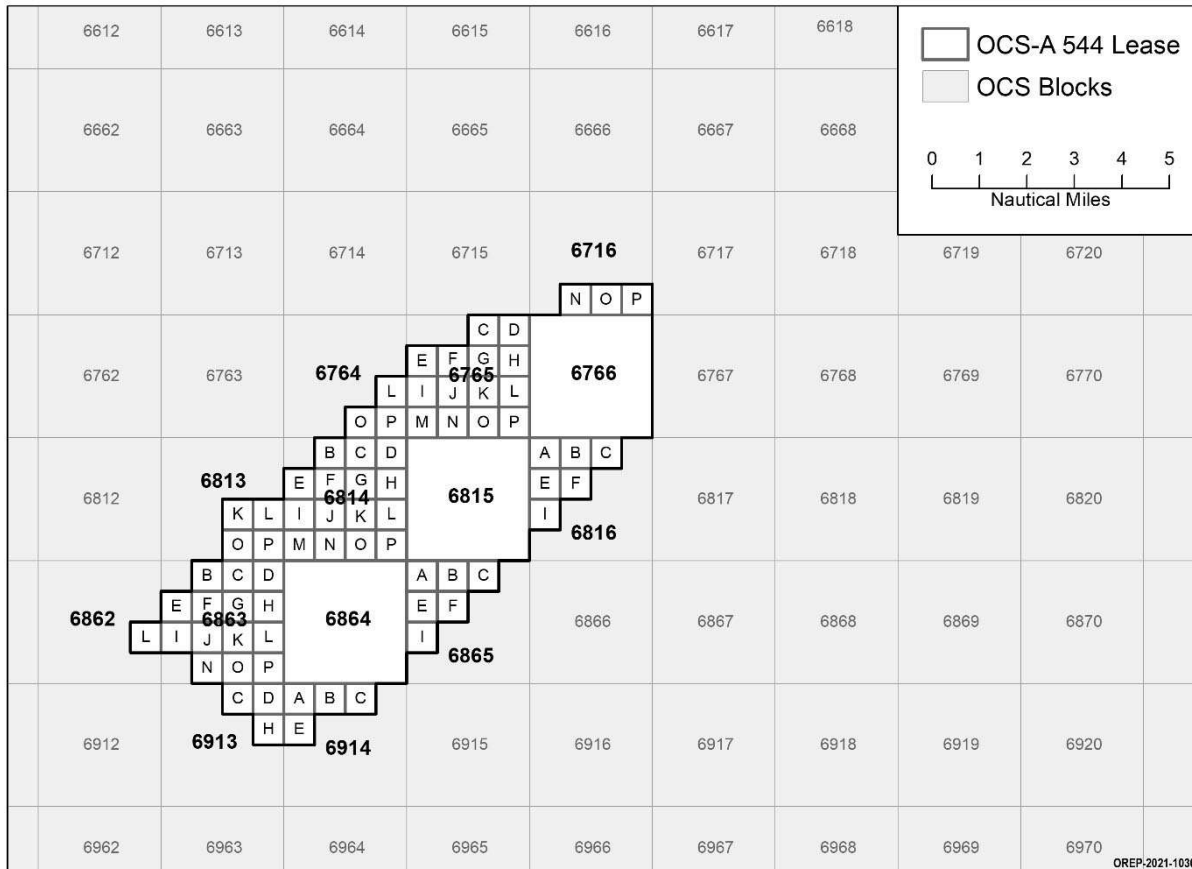
**Lease OCS-A 0544**

The following Blocks or portions of Blocks lying within Official Protraction Diagram New York NK18-12, are depicted on the map below and comprise 43,056 acres, more or less.

- 1) Block 6716, SE1/4 of SW1/4, S1/2 of SE1/4
- 2) Block 6764, E1/2 of SE1/4, SW1/4 of SE1/4
- 3) Block 6765, E1/2, S1/2 of NW1/4, SW1/4
- 4) Block 6766, All of Block
- 5) Block 6813, SE1/4
- 6) Block 6814, E1/2, E1/2 of NW1/4, SW1/4 of NW1/4, SW1/4
- 7) Block 6815, All of Block
- 8) Block 6816, NW1/4 of NE1/4, NW1/4, NW1/4 of SW1/4
- 9) Block 6862, NE1/4 of SE1/4
- 10) Block 6863, E1/2, E1/2 of NW1/4, SW1/4 of NW1/4, N1/2 of SW1/4, SE1/4 of SW1/4
- 11) Block 6864, All of Block
- 12) Block 6865, NW1/4 of NE1/4, NW1/4, NW1/4 of SW1/4
- 13) Block 6913, N1/2 of NE1/4, SE1/4 of NE1/4
- 14) Block 6914, NW1/4 of NE1/4, N1/2 of NW1/4, SW1/4 of NW1/4

For the purposes of these calculations, a full Block is 2,304 hectares. The acreage of a hectare is 2.471043930.

**New York Bight - Hudson North Lease Area (OCS-A 544)**



III. Renewable Energy Resource

Wind

IV. Description of the Project

A project to generate energy using wind turbine generators and any associated resource assessment activities, located on the Outer Continental Shelf in the leased area, as well as associated offshore substation platforms, inter-array cables, and subsea export cables.

V. Description of Project Easement(s)

Once approved, the Lessor will incorporate Lessee's project easement(s) in this lease as ADDENDUM "D."



U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM “B”**

LEASE TERM AND FINANCIAL SCHEDULE

Lease Number OCS-A 0544

I. Lease Term

The duration of each term of the lease is described below. The terms may be extended or otherwise modified in accordance with applicable regulations in 30 CFR Part 585.

<b>Lease Term</b>	<b>Duration</b>
Preliminary Term	1 year
Site Assessment Term	5 years
Operations Term	33 years

Schedule: Addendum “C” includes a schedule and reporting requirements for conducting site characterization activities.

Renewal: The Lessee may request renewal of the operations term of this lease, in accordance with applicable regulations in 30 CFR Part 585. The Lessor, at its discretion, may approve a renewal request to conduct substantially similar activities as were originally authorized under this lease or in an approved plan. The Lessor will not approve a renewal request that involves development of a type of renewable energy not originally authorized in the lease. The Lessor may revise or adjust payment terms of the original lease as a condition of lease renewal.

II. Definitions

“Lease Issuance Date” refers to the date on which this lease has been signed by *both* the Lessee and the Lessor.

“Effective Date” has the same meaning as “effective date” in the Bureau of Ocean Energy Management (BOEM) regulations provided in 30 CFR 585.237.

“Lease Anniversary” refers to the anniversary of the Effective Date of the lease.

“End Date” refers to the earlier of a) the last calendar day of the last month of the Operations Term; or b) the date on which the lease terminates in the event of a lease termination for another reason under 30 CFR 585.432.

“Commercial Operations” means the generation of electricity or other energy product for commercial use, sale, or distribution.

“Commercial Operation Date,” or “COD,” refers to the date on which the Lessee first begins Commercial Operations on the lease.

“Delivery Point” is the meter identified in the Construction and Operations Plan (COP) where the Lessee’s facility interconnects with the electric grid to deliver electricity for sale.

An individual wind generation turbine is said to be “available for Commercial Operations” on or after the first day that it engages in Commercial Operations on the lease; and to be no longer available for Commercial Operations on or after the day when it is permanently decommissioned. These dates are determined by the COP, the Facility Design Report (FDR) or Fabrication Installation Report (FIR).

### III. Payments

Unless otherwise authorized by the Lessor in accordance with the applicable regulations in 30 CFR Part 585, the Lessee must make payments as described below.

(a) **Rent.** The Lessee must pay rent as described below:

Rent payments prior to the COD, or prior to the lease End Date in the event that the lease terminates prior to the COD, are calculated by multiplying the acres in the leased area times the rental rate per acre. The acreage for your lease is documented in Addendum A. For example:

- Acres: 100,000
- Annual Rental Rate: \$3.00 per acre or fraction thereof
- Rental Fee for Entire Leased Area:  $\$3.00 \times 100,000 = \$300,000$

The first year’s rent payment is due within 45 days of the date that the lease is received by the Lessee for execution, in accordance with 30 CFR 585.503. Rent for the entire leased area for the next year and for each subsequent year is due on or before each Lease Anniversary through the year in which the COD occurs. The rent for each year subsequent to the COD on the imputed portion of the lease not authorized for Commercial Operations is due on or before each Lease Anniversary.

Once a portion of the lease begins commercial operations, rent will only be due for the undeveloped or non-operating acreage. The rent calculation becomes a three-step process:

- (1) rent is calculated on the portion of the lease not authorized for commercial operations.
- (2) rent is calculated on the portion of the lease authorized for commercial operations, but without operating turbines.
- (3) the sum of (1) and (2) yield the rent due.

**Step (1):** The Lessee will continue to pay rent at the lease rate for acreage outside the approved commercial project area. The demarcation between acreage for a commercial project and undeveloped acreage will be defined in the COP or supplemental documents approved by BOEM. For example, if the total lease acreage is 100,000 acres and exactly three-quarters of the lease acreage is approved for commercial operations, 25,000 acres is not authorized for commercial operations.

- Acres: 25,000
- Annual Rental Rate: \$3.00 per acre or fraction thereof
- Rental Fee for Undeveloped Leased Area:  $\$3.00 \times 25,000 = \$75,000$

**Step (2):** Acreage for the approved project area subject to rent will be the complement of the operating name plate capacity divided by the total nameplate capacity,  $\frac{M_t}{\sum N_w}$ , as defined in Section III (b) (4) below, prior to any adjustments as specified in the most recent approved COP for turbine maintenance, replacements, repowering, or decommissioning. If contiguous acreage for an approved project cannot be developed due to buffers or other surface occupancy restrictions, it will be considered part of the operating area of the lease and covered by the lease's operating fee payment.

- Acres: 75,000
- Annual Rental Rate: \$3.00 per acre or fraction thereof
- Rental Fee for Undeveloped Acreage Authorized for Commercial Operations:  $\$3.00 \times 75,000 \times \left(1 - \frac{M_t}{\sum N_w}\right) = \$\text{Rent}$

Using the summed capacity of 14.21 megawatt (MW) from the 30 MW project in Table 1 from Section III (b) (4) below, the rental calculation for the project area is:  $\$3.00 \times 75,000 \times (1 - 0.473667) = \$118,425$

**Step (3):** Summing the rent due in steps (1) & (2):  $\$75,000 + \$118,425 = \$193,425$ .

- The Adjusted Annual Rent Payment will be rounded up to the nearest dollar.

All rent payments must be made as required in 30 CFR 1218.51. Late rent payments will be charged interest in accordance with 30 CFR 1218.54.

Advance lease rent and operating fee payments are due annually, before the lease anniversary date. All rent payments, including the last rent payment, are payable for the full year and will not be prorated to the COD or other installation milestones. If the installation schedule proceeds more quickly than projected by the lessee, lease payments may need to be reconciled. The Lessee should work with BOEM's Office of Renewable Energy Programs and the Office of Natural Resources Revenue on any payment reconciliation as instructed in Section III (c).

**(1) Project Easement.**

Rent for any project easement(s) is described in ADDENDUM "D".

**(2) Relinquishment.**

If the Lessee submits an application for relinquishment of a portion of the leased area within the first 45 calendar days following the date that the lease is received by the Lessee for execution, and the Lessor approves that application, no rent payment will be due on that relinquished portion of the leased area. Later relinquishments of any leased area will reduce the Lessee's rent payments due the year following the Lessor's approval of the relinquishment, through a reduction in the Acres in Leased Area and the corresponding Rental Fee for the Entire Leased Area and any related Adjusted Annual Rent Payments.

- (b) Operating Fee.** The Lessee must pay an operating fee as described below:

**(1) Initial Operating Fee Payment.**

The Lessee must pay an initial prorated operating fee within 45 calendar days after the COD. The initial operating fee payment covers the first year of Commercial Operations on the lease and will be calculated in accordance with subsection (4) below, using an operating fee rate of 0.02 and a capacity factor of 0.4.

**(2) Annual Operating Fee Payments.**

The Lessee must pay the operating fee for each subsequent year of Commercial Operations on or before each Lease Anniversary following the formula in subsection (4) below. The Lessee must calculate each operating fee annually subsequent to the initial operating fee payment using an operating fee rate of 0.02 through the thirty-three year operations term of the lease. If the Lessor determines that the Lessee has met the threshold for the supply chain incentive under section 7.2 of Addendum C, then the operating fee rate will be 0.01 instead of 0.02 for five years starting the year after the Lessor makes the determination. After five years at 0.01, the operating fee rate will be 0.02 for the remainder of the lease. The capacity factor of 0.4 will remain in effect until the Lease Anniversary of the year in which the Lessor adjusts the capacity factor.

**(3) Final Operating Fee Payment.**

The final operating fee payment is due on the Lease Anniversary prior to the End Date. The final operating fee payment covers the last year of Commercial Operations on the lease and will be calculated in accordance with the formula in subsection (4) below.

**(4) The formula for calculating the operating fee in year *t*.**

$F_t$	=	$M_t$	*	$H$	*	$c_p$	*	$P_t$	*	$r_t$
(annual operating fee)		(nameplate capacity)		(hours per year)		(capacity factor)		(power price)		(operating fee rate)

Where:

$t =$	the year of Commercial Operations on the lease starting from each Lease Anniversary, where $t$ equals 1 represents the year beginning on the Lease Anniversary prior to, or on, the COD.
$F_t =$	the dollar amount of the annual operating fee in year $t$ .
$M_t =$	<p>the nameplate capacity expressed in megawatts (MW) rounded to the nearest second decimal place in year <math>t</math> of Commercial Operations on the lease. The capacity calculation is a two-step process: (1) scaling each turbine’s nameplate capacity in proportion to the number of days in the year that it is operational and (2) summing these scaled values across all turbines.</p> <p>The value of <math>M_t</math>, reflecting the availability of turbines, will be determined based on the FDR or FIR. This value will be adjusted to reflect any changes to installed capacity approved by BOEM as of the date each operating fee payment is due, in accordance with the calculation in Equation 1, for each year of Commercial Operations on the lease.</p> $(1) M_t = \sum_{w=1}^{W_t} \left( N_w \times \left[ \frac{Y_{w,t}}{D} \right] \right)$

Where:

$W_t$  = Number of individual wind generation turbines,  $w$ , that will be available for Commercial Operations during any day of the year,  $t$ , per the FDR or FIR.

$N_w$  = Nameplate capacity of individual wind generation turbine,  $w$ , per the FDR or FIR expressed in MW.

$Y_{w,t}$  = Number of days that turbine  $w$  is commercially available during year.

$D$  = Days in the year set equal to 365 in all years for purposes of this calculation.

$M_t$  may be reduced only in the event that installed capacity is permanently decommissioned.  $M_t$  will not be changed in response to routine or unplanned maintenance of units, including the temporary removal of a nacelle for off-site repair or replacement with a similar unit.

EXAMPLE: Table 1 illustrates the calculations represented by Equation (1) for a single lease year for a lease on which the lessee plans to erect six turbines, each with a nameplate capacity of 5 MW. Based on the days in each turbine's commercial operations period (column B), the exhibit shows the number of days during the year that the turbine is available for operation. Dividing this value by 365 (column D) yields the percent of days during the year that the turbine is available for operation (column E). For each turbine, the resulting percentage (column E) is multiplied by its nameplate capacity (column A) to calculate its scaled capacity for the year (column F). The individual values in column F are then summed across all six turbines to calculate total capacity ( $M_t$ ).

**Table 1: Example of  $M_t$  Calculations for Installation**

Turbine	Nameplate Capacity ( $N_w$ ) [A]	Days in Turbine's Commercial operations Period [B]	Number of days Turbine is available for operation in year $t$ ( $Y_{w,t}$ ) [C]	Number of days in the Year [D]	Percent of days available for Commercial Operation $\left(\frac{Y_{w,t}}{D}\right)$ [E = C ÷ D]	Turbine capacity scaled based on percent of days in commercial operation $N_w \times \frac{Y_{w,t}}{D}$ [F = A × E]
#1	5	January 1 to December 31	365	365	100%	5.00
#2	5	January 1 to December 31	365	365	100%	5.00
#3	5	October 1 to December 31	92	365	25.2%	1.26
#4	5	October 1 to December 31	92	365	25.2%	1.26
#5	5	October 1 to December 31	92	365	25.2%	1.26
#6	5	December 1 to December 31	31	365	8.5%	0.42
Available capacity summed across all turbines: $M_t = \sum_{w=1}^{W_t} \left( N_w \times \left[ \frac{Y_{w,t}}{D} \right] \right) = 14.21$						

The same calculation would be performed for the lease during the decommissioning phase.

H =	the number of hours in the year for billing purposes which is equal to 8,760 for all years of Commercial Operations on the lease.																																								
c <sub>p</sub> =	<p>the “Capacity Factor” in Performance Period p, which represents the share of anticipated generation of the facility that is delivered to where the Lessee’s facility interconnects with the electric grid (i.e. the Delivery Point) relative to its generation at continuous full power operation at the nameplate capacity, expressed as a decimal between zero and one.</p> <p>The initial Capacity Factor (C<sub>0</sub>) will be set to 0.4.</p> <p>The Capacity Factor will be subject to adjustment at the end of each Performance Period. After the sixth year of Commercial Operations on the lease has concluded, the Lessee will utilize data gathered from years two through six of Commercial Operations on the lease and propose a revised Capacity Factor to be used to calculate subsequent annual payments, as provided for in Table 2 below. A similar process will be conducted at the conclusion of each five-year Performance Period, thereafter.</p> <p><b>Table 2: Definition of Performance Periods</b></p> <table border="1"> <thead> <tr> <th>Performance Period (p)</th> <th>Commercial Operation Years (t)</th> <th>Payments Affected by Adjustment</th> <th>Capacity Factor (C)</th> <th>Date End Year (n)</th> </tr> </thead> <tbody> <tr> <td>0 (COD)</td> <td>Not Applicable</td> <td>Payments 1 to 7</td> <td>C<sub>0</sub>=0.4</td> <td>--</td> </tr> <tr> <td>1</td> <td>t = 2 to 6</td> <td>Payments 8 to 12</td> <td>C<sub>1</sub></td> <td>n<sub>1</sub>=6</td> </tr> <tr> <td>2</td> <td>t = 7 to 11</td> <td>Payments 13 to 17</td> <td>C<sub>2</sub></td> <td>n<sub>2</sub>=11</td> </tr> <tr> <td>3</td> <td>t = 12 to 16</td> <td>Payments 18 to 22</td> <td>C<sub>3</sub></td> <td>n<sub>3</sub>=16</td> </tr> <tr> <td>4</td> <td>t = 17 to 21</td> <td>Payments 23 to 27</td> <td>C<sub>4</sub></td> <td>n<sub>4</sub>=21</td> </tr> <tr> <td>5</td> <td>t = 22 to 26</td> <td>Payments 28 to 32</td> <td>C<sub>5</sub></td> <td>n<sub>5</sub>=26</td> </tr> <tr> <td>6</td> <td>t = 27 to 31</td> <td>Payment 33</td> <td>C<sub>6</sub></td> <td>n<sub>6</sub>=31</td> </tr> </tbody> </table> <p><b>Adjustments to the Capacity Factor</b></p> <p>The Actual 5-year Average Capacity Factor (X<sub>p</sub>) is calculated for each Performance Period after COD (p &gt; 0) per Equation 2 below. X<sub>p</sub> represents the sum of actual, metered electricity generation in megawatt-hours (MWh) at the Delivery Point to the electric grid (A<sub>t</sub>) divided by the amount of electricity generation in MWh that would have been produced if the facility operated continuously at its full, stated capacity (M<sub>t</sub>) in all of the hours (h<sub>t</sub>) in each year, t, of the corresponding five-year period.</p> $(2) X_p = \frac{\sum_{t=n-4}^n A_t}{(\sum_{t=n-4}^n M_t \times h_t)}$ <p>Where:</p> <p>M<sub>t</sub> = Nameplate Capacity as defined above.</p> <p>n = “Date End Year” value for the Performance Period, p, as defined in Table 2.</p> <p>p = Performance Period as defined in Table 2.</p> <p>A<sub>t</sub> = Actual generation in MWh associated with each year of Commercial Operations, t, on the</p>	Performance Period (p)	Commercial Operation Years (t)	Payments Affected by Adjustment	Capacity Factor (C)	Date End Year (n)	0 (COD)	Not Applicable	Payments 1 to 7	C <sub>0</sub> =0.4	--	1	t = 2 to 6	Payments 8 to 12	C <sub>1</sub>	n <sub>1</sub> =6	2	t = 7 to 11	Payments 13 to 17	C <sub>2</sub>	n <sub>2</sub> =11	3	t = 12 to 16	Payments 18 to 22	C <sub>3</sub>	n <sub>3</sub> =16	4	t = 17 to 21	Payments 23 to 27	C <sub>4</sub>	n <sub>4</sub> =21	5	t = 22 to 26	Payments 28 to 32	C <sub>5</sub>	n <sub>5</sub> =26	6	t = 27 to 31	Payment 33	C <sub>6</sub>	n <sub>6</sub> =31
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6	t = 27 to 31	Payment 33	C <sub>6</sub>	n <sub>6</sub> =31																																					

	<p>lease that is transferred at the Delivery Point; Delivery Point meter data supporting the values submitted for annual actual generation must be recorded, preserved, and timely provided to the Lessor upon request. The generation data for the facility must be the same data reported on the Energy Information Administration’s EIA-923.</p> <p><math>h_t</math> = Hours in the year on which the Actual Generation associated with each year of Commercial Operations, <math>t</math>, on the lease is based; this definition of “hours in the year” differs from the definition of <math>H</math> in the operating fee equation above. The hours in the year for purposes of calculating the capacity factor must take into account the actual number of hours, including those in leap years.</p> <p>The value of the Capacity Factor at the outset of Commercial Operations (<math>p = 0</math>) is set to 0.4 as stated in equation 3:</p> <p><b>(3)</b> <math>c_0 = 0.4</math></p>
<p><math>P_t =</math></p>	<p>a measure of the annual average wholesale electric power price expressed in dollars per MW hour.</p> <p>The Lessee must calculate <math>P_t</math> at the time each operating fee payment is due, subject to approval by the Lessor. The Price (<math>P_t</math>) must equal the simple average of the “on-the-hour” spot price indices for the <i>NYISO NYC-J</i> power market for the most recent calendar year of data available as reported by the Federal Energy Regulatory Commission (FERC). Alternatively, <math>P_t</math> may be based on aggregated data from commercial subscription services such as S&amp;P Global Market Intelligence Platform or Hitachi ABB Velocity Suite. BOEM will post the power price data it intends to use for the lessee’s reference.</p> <p>The source of data used in the calculations must be noted in the Lessee’s documentation supporting their estimate of the value of <math>P_t</math> each year for review and approval by the Lessor. BOEM will use the posted prices to verify the lessee’s calculations.</p>
<p><math>r_t =</math></p>	<p>the operating fee rate of 0.02 (2%) or 0.01 (1%), as applicable.</p>

**(c) Reporting, Validation, Audits, and Late Payments.**

The Lessee must submit the values used in the operating fee formula to the Lessor at the time the annual payment based on these values is made. Submission of this and other reporting, validation, audit and late payment information as requested by the Lessor must be sent to the Lessor using the contact information indicated in Addendum “A”, unless the Lessor directs otherwise. Failure to submit the estimated values and the associated documentation on time to the Lessor may result in penalties as specified in applicable regulations.

Within 60 days of the submission by the Lessee of the annual payment, the Lessor will review the data submitted and validate that the operating fee formula was applied correctly. If the Lessor validation results in a different operating fee amount, the amount of the annual operating fee payment will be revised to the amount determined by the Lessor.

The Lessor also reserves the right to audit the meter data upon which the Actual 5-year Average Capacity Factor is based at any time during the lease term. If, as a result of such audit, the Lessor

determines that any annual operating fee payment was calculated incorrectly, the Lessor has the right to correct any errors and collect the correct annual operating fee payment amount.

If the annual operating fee is revised downward as a result of the Lessee's calculations, as validated by the Lessor, or an audit of meter data conducted by the Lessee or Lessor, the Lessee will be refunded the difference between the amount of the payment received and the amount of the revised annual operating fee, without interest. Similarly, if the payment amount is revised upward, the Lessee is required to pay the difference between the amount of the payment received and the amount of the revised annual operating fee, plus interest on the balance, in accordance with 30 CFR § 1218.54.

Late operating fee payments will be charged interest in accordance with 30 CFR § 1218.54.

#### IV. Financial Assurance

The Lessor will base the determination for the amounts of all Site Assessment Plan (SAP), COP, and decommissioning financial assurance requirements on estimates of the cost to meet all accrued lease obligations. The Lessor will determine the amount of supplemental and decommissioning financial assurance requirements on a case-by-case basis. The amount of financial assurance required to meet all lease obligations includes:

- (a) **Initial Financial Assurance.** Prior to the Lease Issuance date, the Lessee must provide an initial lease-specific bond, or other approved means of meeting the Lessor's initial financial assurance requirements in an amount equal to \$100,000.
- (b) **Additional Financial Assurance.** In addition to the initial lease-specific financial assurance discussed above, the Lessee is also required to provide additional supplemental bonds associated with the SAP and COP, or other form of financial assurances and a decommissioning bond or other approved means of meeting the Lessee's decommissioning obligations.
  - (1) Prior to the Lessor's approval of a SAP, the Lessor will require an additional supplemental bond or other form of financial assurance in an amount determined by the Lessor based on the complexity, number, and location of all facilities involved in the site assessment activities planned in the SAP, and estimates of the costs to meet all accrued obligations, in accordance with applicable BOEM regulations (30 CFR 585.515-537). The supplemental financial assurance requirement is in addition to the initial lease-specific financial assurance in the amount of \$100,000. The Lessee may meet these obligations by providing a new bond or other acceptable form of financial assurance, or increasing the amount of its existing bond or other form of financial assurance.
  - (2) Prior to the Lessor's approval of a COP, the Lessor may require an additional supplemental bond or other form of financial assurance in an amount determined by the Lessor based on the complexity, number, location of all facilities, activities and Commercial Operations planned in the COP, and estimates of the costs to meet all



accrued obligations, in accordance with applicable BOEM regulations (30 CFR 585.515-537). The supplemental financial assurance requirement is in addition to the initial lease-specific financial assurance in the amount of \$100,000 and an additional supplemental bond or other form of financial assurance required with the SAP. The Lessee may meet this obligation by providing a new bond or other acceptable form of financial assurance, or increasing the amount of its existing bond or other form of financial assurance.

- (3) The Lessor will require a decommissioning bond or other form of financial assurance based on the anticipated decommissioning costs in accordance with applicable BOEM regulations (30 CFR 585.515-537). The decommissioning obligation must be guaranteed through an acceptable form of financial assurance and will be due according to the schedule beginning before commencement of the installation of commercial facilities on a date or dates to be determined by the Lessor.

- (c) **Adjustments to Financial Assurance Amounts.** The Lessor reserves the right to adjust the amount of any financial assurance requirement (initial, supplemental, or decommissioning) associated with this lease and/or reassess the Lessee's cumulative lease obligations, including decommissioning obligations, at any time. If the Lessee's cumulative lease obligations and/or liabilities increase or decrease, the Lessor will notify the Lessee of any intended adjustment to the financial assurance requirements and provide the Lessee an opportunity to comment in accordance with applicable BOEM regulations.

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "C"**

LEASE-SPECIFIC TERMS, CONDITIONS, AND STIPULATIONS

Lease Number OCS-A 0544

The Lessee's rights to conduct activities on the leased area are subject to the following terms, conditions, and stipulations. The Lessor reserves the right to impose additional terms and conditions incident to the future approval or approval with modifications of plans, such as a Site Assessment Plan (SAP) or Construction and Operations Plan (COP).

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## 1 DEFINITIONS

- 1.1 Definition of “Archaeological Resource”: The term “archaeological resource” has the same meaning as “archaeological resource” in the Bureau of Ocean Energy Management (BOEM) regulations provided in 30 CFR 585.112.
- 1.2 Definition of “Effective Date”: The term “Effective Date” has the same meaning as “effective date” in BOEM regulations provided in 30 CFR 585.237.
- 1.3 Definition of “Geological and Geophysical Survey (G&G Survey)”: The term “G&G Survey” serves as a collective term for surveys that collect data on the geology of the seafloor and landforms below the seafloor. High resolution geophysical surveys and geotechnical (sub-bottom) exploration are components of G&G surveys.
- 1.4 Definition of “Geotechnical Exploration”: The term “Geotechnical Exploration,” also referred to as “Sub-bottom Sampling,” or “Geotechnical Testing,” is used to collectively refer to site specific sediment and underlying geologic data acquired from the seafloor and the sub-bottom and includes geotechnical surveys utilizing deep borings, vibracores, and cone penetration tests.
- 1.5 Definition of “High Resolution Geophysical Survey (HRG Survey)”: The term “HRG 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.
- 1.6 Definition of “Protected Species”: The term “protected species” includes marine mammals (those protected under the Endangered Species Act and those protected under the Marine Mammal Protection Act), sea turtles, sturgeon, and giant manta ray.
- 1.7 Definition of “Site Assessment Activities”: The term “site assessment activities” or “site assessment,” has the same meaning as “site assessment activities” in 30 CFR 585.112.
- 1.8 Definition of “Qualified Marine Archaeologist”: The term “qualified marine archaeologist” means a person retained by the Lessee who meets the Secretary of the Interior’s Professional Qualifications Standards for Archaeology (48 FR 44738- 44739), and has experience analyzing marine geophysical data.

## 2 SITE CHARACTERIZATION

- 2.1 **Survey Plan(s):** Prior to conducting each physical, biological, or cultural resources survey in support of the submission of a plan, the Lessee must submit to the Lessor a survey plan. Each distinct survey effort (e.g., mobilization) must be addressed by a survey plan, although a single survey plan may cover more than one survey effort and may cover multiple types of activities (e.g., geotechnical and geophysical surveys on lease and along cable routes).

Each survey plan must include details of activities to be conducted and timelines of each survey effort necessary to support the submission of a plan (i.e., necessary to satisfy the information requirements in the applicable regulations, including but not limited to 30 CFR 585.606, 610, 611, 621, 626, 627, et al.). The Lessor will not accept survey plans that do not provide sufficient detail for review, including but not limited to specific description and illustration of the geographic areas to be surveyed, specific discussion of the survey methods and equipment to be employed, and a schedule of survey activities.

The Lessee must demonstrate compliance with each of the lease stipulations in Section 4 of Addendum "C" and include any waiver requests in its initial survey plan. Each survey plan must be consistent with the Lessee's Fisheries Communication Plan (FCP) (see 3.1.2.1) and Native American Tribal Communications Plan (NATCP) (see 3.1.2.2), and include a description of the Lessee's intentions to coordinate with the U.S. Coast Guard (USCG) to prepare a Notice to Mariners for the specific survey activities described in the survey plan.

The Lessee must submit a survey plan to the Lessor at least 90 calendar days prior to commencement of any survey activities described in the survey plan. Within 30 calendar days from receipt, the Lessor may request the Lessee modify the survey plan to address any comments the Lessor submits to the Lessee on the contents of the survey plan. Comments must be addressed by the Lessee in a manner deemed satisfactory by the Lessor prior to commencement of the survey activities. If the Lessor does not respond with comments or objections within 30 calendar days of receipt of the survey plan, the Lessee may proceed with the survey activities per the proposed schedule. The lack of Lessor comment or objection to the survey plan does not ensure acceptance of the survey results with the SAP and/or COP. If the Lessee is proposing a fisheries survey that could result in the take of species listed under the Endangered Species Act, additional time should be allowed for consultation and/or permits authorizing the activity (see Section 5.1.4).

- 2.2 Pre-Survey Meeting(s) with the Lessor: If requested by the Lessor, the Lessee must hold a pre-survey meeting with the Lessor prior to the commencement of survey activities to discuss the applicable survey plan. The Lessee must ensure the presence at this meeting of any relevant subject matter experts, as requested by the Lessor.

### 3 REPORTING

- 3.1 **Progress Report**: The Lessee must submit to the Lessor a progress report every six months (unless BOEM directs otherwise) through the duration of the site assessment term that includes a brief narrative of the overall progress since the last progress report, or – in the case of the first report – since the Effective Date. Within 60 calendar days from receipt, the Lessor may request the Lessee modify the progress report to address any comments the Lessor submits to the Lessee on the contents of the document. The Lessee must address comments in a manner deemed satisfactory by the Lessor. Should the Lessee not address the comments provided by the Lessor in a timely and adequate manner, BOEM reserves the right to require specific mitigation such as, but not limited to, third party verification/mediation at the Lessee's expense, adjustment of required reporting frequency, or designation that the Lease is not in good standing. This obligation does not expire at the end of the site assessment term and continues until approval of a Construction and Operations Plan.

- 3.1.1 Engagement: The Lessee shall make reasonable efforts to consult with "Tribes and parties,"

that may be potentially affected by the project activities on the OCS, which include, but are not limited to:

- Coastal Communities
- Commercial and Recreational Fishing Industries
- Educational and Research Institutions
- Environmental and Public Interest Non-Governmental Organizations
- Federal, State, and Local Agencies
- Federally recognized Tribes (see 5.3.3)
- Mariners and the Maritime Industry
- Ocean Users
- Submarine Cable Operators
- Underserved Communities, as defined in Section 2 of Executive Order 13985

The Lessee shall make reasonable efforts to implement the project in a manner that minimizes, mitigates, and/or redresses the project's adverse effects, if any, on Tribes and parties. To facilitate consultation under this section, the Lessee should work collaboratively with federal, state, and local governments, community organizations, and Tribes.

The Progress Report must:

- Identify Tribes and parties applicable to the project;
- Document, and update for subsequent reports, engagement with Tribes and parties since the previous reporting period;
- Document potential adverse effects from the Lessee's project to the interests of Tribes and parties;
- Document how, if at all, the design or implementation of the project has been informed by or altered to address these potential effects (including by investing in, or directing benefits to Tribes and parties).
- The report must also include a description of any anticipated or scheduled engagement activities for the next reporting period.
- The report must also include feedback from engagement with Tribes and parties regarding transmission planning, prior to proposing any export cable route.
- The report must provide information that can be made available to the public and posted on the BOEM website.

The intent of this requirement is to improve Lessee communication and transparency with Tribes, parties, and the general public, and to encourage lessees to identify and engage with underserved communities, including environmental justice communities that may be disproportionately impacted by the Project's OCS activities, in order to avoid, minimize, and mitigate potential adverse effects by, for example, investing in these communities.

BOEM will protect privileged or confidential information that you submit, as required by the Freedom of Information Act (FOIA) and 30 CFR 585.113. Exemption 4 of FOIA applies to "trade secrets and commercial or financial information that you submit that is privileged or confidential." 5 U.S.C. 552(b)(4). If you wish to protect the confidentiality of such

information, clearly mark it “Contains Privileged or Confidential Information” and consider submitting such information as a separate attachment. BOEM will not disclose such information, except as required by FOIA. Information that is not labeled as privileged or confidential may be regarded by BOEM as suitable for public release. Further, BOEM will not treat as confidential aggregate summaries of otherwise nonconfidential information.

3.1.2 Communication Plans: The Progress Report must include a section with plan(s) on how the Lessee will communicate with fisheries, federally recognized Tribes, and agencies (see 3.1.2.1, 3.1.2.2, 3.1.2.3). In addition to the plans, each progress report should provide updates on the progress of communication efforts with those and other affected stakeholder or ocean user groups during the reporting period (see 3.1.1).

3.1.2.1 Fisheries Communications Plan and Fisheries Liaison: The Lessee must develop a draft FCP and make it publicly available within 120 days of lease execution. The Lessee must update and refine the FCP from time to time, in response to feedback obtained by engagement with Tribes and parties and BOEM consultation. If the Lessee does not develop a project website, the Lessee must make the FCP available to the Lessor and the public upon request. The plan must include the following:

- A description of the strategies that the Lessee intends to use for communicating with commercial and recreational fisheries prior to and during activities in support of the submission of a plan (e.g. SAP or a COP). This description must include mechanisms to distribute notices to Federal and state fisheries license holders known to operate near the lease area through a local “Notice to Mariners” and outreach to, e.g., Fisheries Management Councils, newsletters, websites, Fisheries Liaison Officers and/or Fisheries Representatives, and applicable state agencies.
- The contact information for an individual retained by the Lessee as its primary point of contact with commercial and recreational fisheries (i.e., Fisheries Liaison).
- The strategy and general timing of discussions with commercial and recreational fisheries regarding the reduction of conflicts with facility designs, pursuant to Lease stipulation 3.1.1.
- A process to file a complaint with the offshore wind operator and seek the replacement of or compensate for lost gear.
- Plans to coordinate with commercial and recreational fisheries to identify peak fishing seasons and, to the extent practicable, avoid interaction offshore between survey vessels and commercial fishermen.

Additionally, the Lessee is required to (i) notify applicable ocean users two weeks in advance of any geological and geophysical survey activities and, (ii) provide an annual summary of filed complaint claims and outcomes to BOEM to better understand the frequency and extent of gear interactions.

3.1.2.2 Native American Tribes Communication Plan: The Lessee must develop a publicly available NATCP that describes the strategies that the Lessee intends to use for communicating with federally recognized Tribes, and that should outline specific methods for engaging with and disseminating information to federally recognized Tribes with cultural and/or historical ties to the lease area. The NATCP must include the contact information for an individual retained by the Lessee as its primary point of contact with federally recognized Tribes (i.e., a Tribal Liaison). The NATCP should include detailed information and protocols for regular engagement with federally recognized Tribes

including, but not limited to, the types of engagement activities (e.g., one-on-one meetings, group meetings, open houses, open information sharing meetings, etc.); the frequency of proposed engagements/meetings (e.g., monthly, quarterly, bi-annually, annually, etc.); meeting locations and/or virtual platforms; and contact information (e.g., telephone numbers, email addresses, website addresses, etc.). The Lessee must make the NATCP available to the Lessor and the federally recognized Tribes upon request. The Lessee must provide a draft NATCP to BOEM and federally recognized Tribes for review and comment, and hold a meeting with federally recognized Tribes to discuss the NATCP, within 120 days of lease execution. The Lessee must invite federally recognized Tribes with cultural and historical ties to the lease area to participate in the development of the NATCP. If a federally recognized Tribe wishes to participate, the Lessee should request that the Tribe designate a Tribal Representative from each Tribe to serve as the Tribe's primary point of contact for communicating with the Lessee. If a federally recognized Tribe does not wish to participate in the development of the NATCP, the Lessee is no longer required to include them in NATCP communications. If a Tribe does not respond to outreach from the Lessee, the Lessee will continue to invite the Tribe to participate in NATCP engagement opportunities until the Tribe provides a written response to the Lessee or Lessor.

3.1.2.3 Agency Communication Plan (ACP): The Lessee must develop a publicly available ACP that describes the strategies that the Lessee intends to use for communicating with federal, state and local agencies with authority related to the lease area and should outline specific methods for engaging with and disseminating information related to permits and trust resources to these agencies. The purpose of the ACP is to ensure early and active information sharing, focused discussion of potential issues, and collaborative identification of solutions in order to improve the quality and efficiency of various agency decision-making processes, and to promote the sustainable development of offshore wind energy projects. The ACP must include the contact information for an individual retained by the Lessee as its primary point of contact with agencies, (i.e., an Agency Liaison). The ACP should include detailed information and protocols for regular engagement with permitting and resource agencies including, but not limited to, the types of engagement activities (e.g., one-on-one meetings, interagency meetings, open information sharing meetings, etc.); the frequency of proposed engagements/meetings (e.g., monthly, quarterly, bi-annually, annually, etc.); meeting locations and/or virtual platforms; and contact information (e.g., telephone numbers, email addresses, etc.). The Lessee must make the ACP available to the Lessor and other agencies upon request. The Lessee must provide a draft ACP to BOEM and other permitting and resource agencies with authority related to the lease area for review and comment, and host a meeting with each interested agency, to discuss the ACP within 120 days of lease execution. Meetings may include multiple agencies. The Lessee must invite agencies with permitting roles and/or resource expertise to participate in the ACP. The Lessee should request that the agency designate a primary point of contact(s) for communicating with the Lessee. If an agency states in writing to the Lessee or Lessor that it does not wish to participate in the ACP, the Lessee need no longer include that agency in ACP communications and must document this change in the ACP. If an agency does not respond to outreach from the Lessee, the Lessee will continue to invite the agency to participate in ACP engagement opportunities until the agency provides a response. Note that a decision to not participate in the ACP in no way changes the agency regulatory authority or the need to communicate with that agency. The Lessee must update the ACP or provide other written summary of how the Lessee used information gained during agency engagement to inform project planning and

development.

- 3.1.2.4 **Coordinated Engagement:** To the maximum extent practicable, the Lessee must coordinate engagement activities for Tribes and parties (see Section 3.1.1) with other regional lessees and document their activities in the Progress Report. Lessee(s) must design coordinated engagement activities to decrease the communication and consultation burden on Tribes and parties. BOEM appreciates that not all engagement can be coordinated.
- 3.1.3 **Survey Plans:** The progress report must include an update regarding progress in executing the activities included in the survey plan(s), and include as an enclosure an updated survey plan(s) accounting for any modifications in schedule.

#### **4 NATIONAL SECURITY AND MILITARY OPERATIONS**

- 4.1 **Hold and Save Harmless:** Whether compensation for such damage or injury might be due under a theory of strict or absolute liability or otherwise, the Lessee assumes all risks of damage or injury to persons or property, which occur in, on, or above the Outer Continental Shelf (OCS), to any persons or to any property of any person or persons in connection with any activities being performed by the Lessee in, on, or above the OCS, if such injury or damage to such person or property occurs by reason of the activities of any agency of the United States Government, its contractors, or subcontractors, or any of its officers, agents or employees, being conducted as a part of, or in connection with, the programs or activities of the individual military command headquarters (hereinafter “the appropriate command headquarters”) listed in the contact information provided as an enclosure to this lease.

Notwithstanding any limitation of the Lessee’s liability in Section 9 of the lease, the Lessee assumes this risk whether such injury or damage is caused in whole or in part by any act or omission, regardless of negligence or fault, of the United States, its contractors or subcontractors, or any of its officers, agents, or employees. The Lessee further agrees to indemnify and save harmless the United States against all claims for loss, damage, or injury in connection with the programs or activities of the command headquarters, whether the same be caused in whole or in part by the negligence or fault of the United States, its contractors, or subcontractors, or any of its officers, agents, or employees and whether such claims might be sustained under a theory of strict or absolute liability or otherwise.

- 4.2 **Evacuation or Suspension of Activities:**
- 4.2.1 **General:** The Lessee hereby recognizes and agrees that the United States reserves and has the right to temporarily suspend operations and/or require evacuation on this lease in the interest of national security consistent with Section 3(c) of this lease.



- 4.2.2 **Notification:** Every effort will be made by the appropriate military agency to provide as much advance notice as possible of the need to suspend operations and/or evacuate. Advance notice will normally be given before requiring a suspension or evacuation. Temporary suspension of operations may include, but is not limited to the evacuation of personnel and appropriate sheltering of personnel not evacuated. "Appropriate sheltering" means the protection of all Lessee personnel for the entire duration of any Department of Defense activity from flying or falling objects or substances and will be implemented by an order (oral and/or written) from the BOEM, Office of Renewable Energy Programs (OREP) Program Manager, after consultation with the appropriate command headquarters or other appropriate military agency, or higher Federal authority. The appropriate command headquarters, military agency, or higher authority will provide information to allow the Lessee to assess the degree of risk to, and provide sufficient protection for, the Lessee's personnel and property.
- 4.2.3 **Duration:** Suspensions or evacuations for national security reasons will not generally exceed seventy-two (72) hours; however, any such suspension may be extended by order of the OREP Program Manager. During such periods, equipment may remain in place, but all operations, if any, must cease for the duration of the temporary suspension if so directed by the OREP Program Manager. Upon cessation of any temporary suspension, the OREP Program Manager will immediately notify the Lessee such suspension has terminated and operations on the leased area can resume.
- 4.2.4 **Lessee Point-of-Contact for Evacuation/Suspension Notifications:** The Lessee must inform the Lessor of the persons/offices to be notified to implement the terms of 4.2.2 and 4.2.3.
- 4.2.5 **Coordination with Command Headquarters:** The Lessee must establish and maintain early contact and coordination with the appropriate command headquarters, in order to avoid or minimize the potential to conflict with and minimize the potential effects of conflicts with military operations.
- 4.2.6 **Reimbursement:** The Lessee is not entitled to reimbursement for any costs or expenses associated with the suspension of operations or activities or the evacuation of property or personnel in fulfillment of the military mission in accordance with 4.2.1 through 4.2.5 above.
- 4.3 **Electromagnetic Emissions:** The Lessee, prior to entry into any designated defense operating area, warning area, or water test area, for the purpose of commencing survey activities undertaken to support SAP or COP submittal must enter into an agreement with the commander of the appropriate command headquarters to coordinate the electromagnetic emissions associated with such survey activities. The Lessee must ensure that all electromagnetic emissions associated with such survey activities are controlled as directed by the commander of the appropriate command headquarters.

## 5 STANDARD OPERATING CONDITIONS

### 5.1 General Requirements

- 5.1.1 Prior to the start of operations, the Lessee must hold a briefing to establish responsibilities of each involved party, define the chains of command, discuss communication procedures,

provide an overview of monitoring procedures, and review operational procedures. This briefing must include all relevant personnel, crew members and Protected Species Observers (PSOs). New personnel must be briefed as they join the work in progress.

- 5.1.2 The Lessee must ensure that all vessel operators and crew members, including PSOs, are familiar with, and understand, the requirements specified in this ADDENDUM “C”.
- 5.1.3 The Lessee must ensure that a copy of ADDENDUM “C” and the Project Design Criteria and Best Management Practices listed in Appendix B of the NMFS Letter of Concurrence issued by the National Marine Fisheries Service (NMFS) on June 29, 2021, is made available on every project-related vessel. The 2021 Biological Assessment and letter of concurrence may be found here: (<https://www.boem.gov/environmental-consultations>).
- 5.1.4 Endangered Species Act (ESA) Consultation for Biological Surveys: The Lessee must consult with BOEM, the NMFS, and the U.S. Fish and Wildlife Service (USFWS) prior to designing and conducting biological surveys intended to support offshore renewable energy plans that could interact with ESA-listed species. Please see the 2021 Biological Assessment (BA) and letter of concurrence here: (<https://www.boem.gov/renewable-energy/nmfs-esa-consultations>) for data collection activities that have been previously consulted upon.

## 5.2 **Protected Species**

- 5.2.1 Protected Species: Unless otherwise authorized by BOEM, Lessee’s OCS activities must comply with the standards in the Project Design Criteria and Best Management Practices found in BOEM’s notice (<https://www.boem.gov/sites/default/files/documents//PDCs%20and%20BMPs%20for%20Atlantic%20Data%20Collection%2011222021.pdf>) last revised on November 22, 2021. The 2021 BA and letter of concurrence from which these measures were derived may be found here: (<https://www.boem.gov/renewable-energy/nmfs-esa-consultations>). At the Lessee’s option, the Lessee, its operators, personnel, and contractors may satisfy this requirement by complying with the NMFS-approved measures to safeguard protected species that are most current at the time an activity is undertaken under this lease, including but not limited to new or updated versions of the 2021 BA or 2021 NMFS Letter of Concurrence, or through new or activity-specific consultations.

## 5.3 **Archaeological Survey Requirements**

- 5.3.1 Archaeological Survey Required: The Lessee must provide the results of an archaeological survey with its plans.
- 5.3.2 Qualified Marine Archaeologist: The Lessee must ensure that the analysis of archaeological survey data collected in support of plan (e.g., SAP and/or COP) submittal and the preparation of archaeological reports in support of plan submittal are conducted by a Qualified Marine Archaeologist.
- 5.3.3 Tribal Pre-Survey Meeting: The Lessee must coordinate a tribal pre-survey meeting by sending a letter through certified mail, and following up with email or phone calls as necessary, to the following Tribes:
- Absentee-Shawnee Tribe of Indians of Oklahoma;
  - Delaware Tribe of Indians;
  - Eastern Shawnee Tribe of Oklahoma;

- Mashantucket Pequot Tribal Nation;
- Mashpee Wampanoag Tribe;
- Mohegan Tribe of Connecticut;
- Shawnee Tribe;
- Stockbridge-Munsee Community Band of Mohican Indians;
- The Delaware Nation;
- The Narragansett Indian Tribe;
- The Shinnecock Indian Nation; and
- Wampanoag Tribe of Gay Head (Aquinnah).

The purpose of this meeting will be for the Lessee and the Lessee's Qualified Marine Archaeologist to discuss the Lessee's Survey Plan and consider requests to monitor portions of the archaeological survey and the geotechnical exploration activities, including the visual logging and analysis of geotechnical samples (e.g., cores, etc.). Notification of the tribal pre-survey meeting must be sent at least 15 calendar days prior to the date of the proposed tribal pre-survey meeting. The meeting must be scheduled for a date at least 30 calendar days prior to commencement of survey activities performed in support of plan submittal and at a location and time that affords the participants a reasonable opportunity to participate. The anticipated date for the meeting must be identified in the timeline of activities described in the applicable survey plan (see 2.1). The Lessee must provide the Lessor with documentation of compliance with this stipulation prior to commencement of surveys.

5.3.4 **Geotechnical Exploration:** The Lessee may only conduct geotechnical exploration activities performed in support of plan (i.e., SAP and/or COP) submittal in locations where an analysis of the results of geophysical surveys has been completed. This analysis must include a determination by a Qualified Marine Archaeologist as to whether any potential archaeological resources are present in the area. Except as allowed by the Lessor under 4.2.6, the geotechnical exploration activities must avoid potential archaeological resources by a minimum of 50 meters (164 feet), and the avoidance distance must be calculated from the maximum discernible extent of the archaeological resource. A Qualified Marine Archaeologist must certify, in the Lessee's archaeological reports, that geotechnical exploration activities did not impact potential historic properties identified as a result of the HRG surveys performed in support of plan submittal, except as follows: in the event that the geotechnical exploration activities did impact potential historic properties identified in the archaeological surveys without the Lessor's prior approval, the Lessee and the Qualified Marine Archaeologist who prepared the report must instead provide a statement documenting the extent of these impacts.

5.3.5 **Monitoring and Avoidance:** The Lessee must inform the Qualified Marine Archaeologist that he or she may elect to be present during HRG surveys and bottom-disturbing activities performed in support of plan (i.e., SAP and/or COP) submittal to ensure avoidance of potential archaeological resources, as determined by the Qualified Marine Archaeologist (including bathymetric, seismic, and magnetic anomalies; side scan sonar contacts; and other seafloor or sub-surface features that exhibit potential to represent or contain potential archaeological sites or other historic properties). In the event that the Qualified Marine Archaeologist indicates that he or she wishes to be present, the Lessee must reasonably facilitate the Qualified Marine Archaeologist's presence, as requested by the

Qualified Marine Archaeologist, and provide the Qualified Marine Archaeologist the opportunity to inspect data quality.

- 5.3.6 **No Impact without Approval:** In no case may the Lessee knowingly impact a potential archaeological resource without the Lessor's prior approval.
- 5.3.7 **Post-Review Discovery Clauses:** If the Lessee, while conducting geotechnical exploration or any other bottom-disturbing site characterization activities in support of plan (i.e., SAP and COP) submittal and after review of the location by a Qualified Marine Archaeologist under 4.2.4, discovers an unanticipated potential archaeological resource, such as the presence of a shipwreck (e.g., a sonar image or visual confirmation of an iron, steel, or wooden hull, wooden timbers, anchors, concentrations of historic objects, piles of ballast rock) or evidence of a pre-contact archaeological site (e.g. stone tools, pottery or other pre-contact artifacts) within the project area, the Lessee must:
- 5.3.7.1 Immediately halt seafloor/bottom-disturbing activities within the area of discovery;
  - 5.3.7.2 Notify the Lessor within 24 hours of discovery;
  - 5.3.7.3 Notify the Lessor in writing via report to the Lessor within 72 hours of its discovery;
  - 5.3.7.4 Keep the location of the discovery confidential and take no action that may adversely impact the archaeological resource until the Lessor has made an evaluation and instructs the applicant on how to proceed; and
  - 5.3.7.5 If (1) the site has been impacted by the Lessee's project activities; or (2) impacts to the site or to the area of potential effect cannot be avoided, conduct additional investigations, as directed by the Lessor, to determine if the resource is eligible for listing in the National Register of Historic Places (30 CFR 585.802(b)). If investigations indicate that the resource is potentially eligible for listing in the National Register of Historic Places, the Lessor will inform the Lessee how to protect the resource or how to mitigate adverse effects to the site. If the Lessor incurs costs in protecting the resource, then, under Section 110(g) of the National Historic Preservation Act, the Lessor may charge the Lessee reasonable costs for carrying out preservation responsibilities under the OCS Lands Act (30 CFR 585.802(c-d)).

#### 5.4 **Avian and Bat Survey and Reporting Requirements**

- 5.4.1 **Lighting:** Any lights used to aid marine navigation by the lessee during construction, operations, and decommissioning of a meteorological buoy must meet USCG requirements for private aids to navigation [[https://www.uscg.mil/forms/cg/CG\\_2554.pdf](https://www.uscg.mil/forms/cg/CG_2554.pdf)] and BOEM's Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development [<https://www.boem.gov/2021-lighting-and-marking-guidelines>]. For any additional lighting, the lessee must use such lighting only when necessary, and the lighting must be hooded downward and directed when possible, to reduce upward illumination and illumination of adjacent waters.
- 5.4.2 **Motus Wildlife Tracking System:** To help address information gaps on offshore movements of birds and bats, including ESA-listed species, the Lessee must install Motus stations on meteorological or environmental data buoys in coordination with U.S. Fish and Wildlife Service's Offshore Motus network.

- 5.4.3 **Bird Deterrents:** To minimize the attraction of birds, the Lessee must install bird deterrent devices (e.g., anti-perching), where appropriate.
- 5.4.4 **Avian Annual Reporting:** The Lessee must provide an annual report to the Lessor and USFWS using the contact information provided as an Enclosure to this lease, or updated contact information as provided by the Lessor. This report must document any dead or injured birds or bats found during activities conducted in support of plan submittal. The first report must be submitted within 6 months of the start of the first survey conducted in support of plan submittal, and subsequent reports must be submitted annually thereafter until all surveys in support of plan submittal have concluded and all such birds and bats have been reported. If surveys are not conducted in a given year, the annual report may consist of a simple statement to that effect. An annual report must be provided to BOEM and USFWS documenting any dead (or injured) birds or bats found on vessels and structures during construction, operations, and decommissioning. The report must contain the following information: the name of species, date found, location, a picture to confirm species identity (if possible), and any other relevant information. Carcasses with Federal or research bands must be reported to the United States Geological Survey Bird Band Laboratory, available at <https://www.pwrc.usgs.gov/bbl/>.
- 5.4.5 **Survey Results and Data:** The Lessee must provide the results of avian surveys and data to BOEM and USFWS with its plans.

## **6 PROJECT LABOR AGREEMENTS**

The Lessee must make every reasonable effort to enter a Project Labor Agreement(s) (PLA) covering the construction stage of any project proposed for the leased area.

## **7 SUPPLY CHAIN**

7.1 **Supply Chain Statement of Goals:** The Lessee must submit to the Lessor a statement of goals in which the Lessee will describe any plans by Lessee for contributing to the creation of a robust and resilient US-based offshore wind supply chain. The Statement of Goals must include the Lessee's plans for investments in supply chain improvements, if any, to support the offshore wind industry, including investments in:

- Installation, downpipe, survey and other vessels,
- Port infrastructure,
- Grid upgrades,
- Research & development,
- Manufacturing of components and facilities,
- Supply chain architecture like fabrication and assembly halls, port storage, laydown areas,
- Dry docks and navigation channels,
- Onshore and offshore docking and refueling stations for autonomous vehicles,
- Workforce diversity, training, and development, and
- Ensuring equal access to contracting opportunities.

Annually following COP approval, the Lessee must send updates to the Lessor on the Supply Chain Statement of Goals, and the Lessee's progress in meeting those goals. This

information may be provided as part of the certification of compliance statement pursuant to 30 CFR 585.633(b).

The Lessee must submit an evaluation of the Lessee's success in meeting these goals no later than the last required Fabrication and Installation Report submission. The Lessee must submit a version of the Statement of Goals, updates, and final report that do not contain confidential information, so that BOEM can make them publicly available.

7.2 **Supply Chain Operating Fee Credit:** To promote the development of the United States' offshore wind supply chain, the Lessee is encouraged to procure major offshore wind components domestically. The Lessee may be eligible for an operating fee rate of 1% for a period of five years. To qualify, the Lessee must satisfy four or more of the following conditions:

- All nacelles for the project are assembled in the United States;
- All turbine blades are manufactured in the United States;
- All towers are manufactured in the United States;
- All foundations are manufactured in the United States;
- All transition pieces are manufactured in the United States;
- All inter-array cables are manufactured in the United States;
- All export cables are manufactured in the United States;
- The offshore substations are manufactured in the United States.

The domestic assembly and manufacturing conditions described above must be meaningful and substantial, as determined by BOEM. For example, a nacelle that is assembled abroad with minor components added in the United States would not satisfy the requirement.

To qualify for the operating fee credit, Lessees must request the credit and must provide to BOEM evidence that four or more of the above-listed conditions were met. Upon BOEM's review and determination that the requesting Lessee has met the criteria to earn the operating fee rate adjustment, the operating fee rate starting in the year after the completion of the review and determination will be 0.01 for five years.

## 8 SITING CONDITIONS

8.1 **Surface Structure Layout and Orientation:** This lease area, OCS-A 0544, is located adjacent to the existing BOEM lease area OCS-A 0512. In the Lessee's proposed project design in the COP, the Lessee must endeavor to design a surface structure layout that contains two common lines of orientation between OCS-A 0512 and OCS-A 0544 (as described in Navigation and Vessel Inspection Circular 01-19). If the Lessee and the neighboring BOEM lessee (i.e., the lessee for OCS-A 0512) cannot agree on such a surface structure layout, the OCS-A 0544 Lessee must incorporate a 2 nmi setback from the boundary of the neighboring lease, within which the OCS-A 0544 Lessee must not construct any surface structures. Rent will be collected on all areas assigned to the Lessee, as outlined in Addendum A, regardless of potential restrictions.

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "D"**

PROJECT EASEMENT

Lease Number OCS-A 0544

This section includes a description of the Project Easement(s), if any, associated with this lease, and the financial terms associated with it. This section will be updated as necessary.

I. Rent

The Lessee must begin submitting rent payments for any project easement associated with this lease commencing on the date that BOEM approves the Construction and Operations Plan or modification of the COP describing the project easement. Annual rent for a project easement 200 feet wide, centered on the transmission cable, is \$70.00 per statute mile. For any additional acreage required, the Lessee must also pay the greater of \$5.00 per acre per year or \$450.00 per year.

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "E"**

RENT SCHEDULE

Lease Number OCS-A 0544

This section includes a description of the schedule for rent payments that will be determined if the Construction and Operations Plan has been approved or approved with modifications. BOEM will update this section as necessary.



U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

Lease Number OCS-A 0544

**CONTACT INFORMATION FOR REPORTING REQUIREMENTS**

The following contact information must be used for the reporting and coordination requirements specified in ADDENDUM "C", Stipulation 5.4:

**United States Fleet Forces (USFF) N46**  
**1562 Mitscher Ave, Suite 250**  
**Norfolk, VA 23551**  
**(757) 836-6206**

All Other Reporting Requirements in Stipulation 5.3:

Bureau of Ocean Energy Management  
Environment Branch for Renewable Energy  
Phone: 703-787-1340  
Email: [renewable\\_reporting@boem.gov](mailto:renewable_reporting@boem.gov)

**ENCLOSURE**

**PUBLIC**



**Attachment To:**

**Section 4 - Project Description and Site Control**

**ATTACHMENT 4-4**

**BOEM LEASE FOR OCS-A 0522**



# United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT  
WASHINGTON, DC 20240-0001

MAR 5 2019

Mr. Lars Thanning Pedersen  
Vineyard Wind LLC  
700 Pleasant Street  
Suite 510  
New Bedford, Massachusetts 02740

Dear Mr. Pedersen:

Please find enclosed one fully executed copy of Vineyard Wind LLC's (Company Number: 15010) commercial lease OCS-A 0522. The lease comprises 132,370 acres, more or less, lying within the Massachusetts Wind Energy Area, and will become effective April 1, 2019.

Please do not hesitate to contact me at our main office number, (703) 787-1300, if you have any further questions.

Sincerely,

James F. Bennett  
Program Manager  
Office of Renewable Energy Programs

Enclosure

PUBLIC

FEB 21 2019

Office of Renewable  
Energy Programs

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF OCEAN ENERGY MANAGEMENT  <b>COMMERCIAL LEASE OF                  SUBMERGED LANDS FOR                  RENEWABLE ENERGY DEVELOPMENT                  ON THE                  OUTER CONTINENTAL SHELF</b>  <i>Paperwork Reduction Act of 1995 statement: This form does not constitute an information collection as defined by 44 U.S.C. § 3501 et seq. and therefore does not require approval by the Office of Management and Budget.</i>	Office	Renewable Energy Lease Number
	Sterling, VA	OCS-A 0522
	Cash Bonus and/or Acquisition Fee	Resource Type
	\$135,100,000.00	Wind
	Effective Date	Block Number(s)
	April 1, 2019	See Addendum A

This lease, which includes any addenda hereto, is hereby entered into by and between the United States of America, ("Lessor"), acting through the Bureau of Ocean Energy Management ("BOEM"), its authorized officer, and

Lessee	Interest Held
Vineyard Wind LLC	100%

("Lessee"). This lease is effective on the date written above ("Effective Date") and will continue in effect until the lease terminates as set forth in Addendum "B." In consideration of any cash payment heretofore made by the Lessee to the Lessor and in consideration of the promises, terms, conditions, covenants, and stipulations contained herein and attached hereto, the Lessee and the Lessor agree as follows:

**Section 1: Statutes and Regulations.**

This lease is issued pursuant to subsection 8(p) of the Outer Continental Shelf Lands Act ("the Act"), 43 U.S.C. §§ 1331 et seq. This lease is subject to the Act and regulations promulgated pursuant to the Act, including but not limited to, offshore renewable energy and alternate use regulations at 30 CFR Part 585 as well as other applicable statutes and regulations in existence on the Effective Date of this lease. This lease is also subject to those statutes enacted (including amendments to the Act or other statutes) and regulations promulgated thereafter, except to the extent that they explicitly conflict with an express provision of this lease. It is expressly understood that amendments to existing statutes, including but not limited to the Act, and regulations may be made, and/or new statutes may be enacted or new regulations promulgated, which do not explicitly conflict with an express provision of this lease, and that the Lessee bears the risk that such amendments, regulations, and statutes may increase or decrease the Lessee's obligations under the lease.

## **Section 2: Rights of the Lessee.**

- (a) The Lessor hereby grants and leases to the Lessee the exclusive right and privilege, subject to the terms and conditions of this lease and applicable regulations, to: (1) submit to the Lessor for approval a Site Assessment Plan (SAP) and Construction and Operations Plan (COP) for the project identified in Addendum "A" of this lease; and (2) conduct activities in the area identified in Addendum "A" of this lease ("leased area") and/or Addendum "D" of this lease ("project easement(s)"), that are described in a SAP or COP that has been approved by the Lessor. This lease does not, by itself, authorize any activity within the leased area.
- (b) The rights granted to the Lessee herein are limited to those activities described in any SAP or COP approved by the Lessor. The rights granted to the Lessee are limited by the lease-specific terms, conditions, and stipulations required by the Lessor per Addendum "C."
- (c) This lease does not authorize the Lessee to conduct activities on the Outer Continental Shelf (OCS) relating to or associated with the exploration for, or development or production of, oil, gas, other seabed minerals, or renewable energy resources other than those renewable energy resources identified in Addendum "A."

## **Section 3: Reservations to the Lessor.**

- (a) All rights in the leased area and project easement(s) not expressly granted to the Lessee by the Act, applicable regulations, this lease, or any approved SAP or COP, are hereby reserved to the Lessor.
- (b) The Lessor will decide whether to approve a SAP or COP in accordance with the applicable regulations in 30 CFR Part 585. The Lessor retains the right to disapprove a SAP or COP based on the Lessor's determination that the proposed activities would have unacceptable environmental consequences, would conflict with one or more of the requirements set forth in subsection 8(p)(4) of the Act (43 U.S.C. § 1337(p)(4)), or for other reasons provided by the Lessor pursuant to 30 CFR 585.613(e)(2) or 30 CFR 585.628(f)(2). Disapproval of plans will not subject the Lessor to liability under the lease. The Lessor also retains the right to approve with modifications a SAP or COP, as provided in applicable regulations.
- (c) The Lessor reserves the right to suspend the Lessee's operations in accordance with the national security and defense provisions of Section 12 of the Act and applicable regulations.
- (d) The Lessor reserves the right to authorize other uses within the leased area and project easements(s) that will not unreasonably interfere with activities described in an approved SAP and/or COP, pursuant to this lease.

#### **Section 4: Payments.**

- (a) The Lessee must make all rent payments to the Lessor in accordance with applicable regulations in 30 CFR Part 585, unless otherwise specified in Addendum "B."
- (b) The Lessee must make all operating fee payments to the Lessor in accordance with applicable regulations in 30 CFR Part 585, as specified in Addendum "B."

#### **Section 5: Plans.**

The Lessee may conduct those activities described in Addendum "A" only in accordance with a SAP or COP approved by the Lessor. The Lessee may not deviate from an approved SAP or COP except as provided in applicable regulations in 30 CFR Part 585.

#### **Section 6: Associated Project Easement(s).**

Pursuant to 30 CFR 585.200(b), the Lessee has the right to one or more project easement(s), without further competition, for the purpose of installing gathering, transmission, and distribution cables, pipelines, and appurtenances on the OCS, as necessary for the full enjoyment of the lease, and under applicable regulations in 30 CFR Part 585. As part of submitting a COP for approval, the Lessee may request that one or more easement(s) be granted by the Lessor. If the Lessee requests that one or more easement(s) be granted when submitting a COP for approval, such project easements will be granted by the Lessor in accordance with the Act and applicable regulations in 30 CFR Part 585 upon approval of the COP in which the Lessee has demonstrated a need for such easements. Such easements must be in a location acceptable to the Lessor, and will be subject to such conditions as the Lessor may require. The project easement(s) that would be issued in conjunction with an approved COP under this lease will be described in Addendum "D" to this lease, which will be updated as necessary.

#### **Section 7: Conduct of Activities.**

The Lessee must conduct, and agrees to conduct, all activities in the leased area and project easement(s) in accordance with an approved SAP or COP, and with all applicable laws and regulations.

The Lessee further agrees that no activities authorized by this lease will be carried out in a manner that:

- (a) could unreasonably interfere with or endanger activities or operations carried out under any lease or grant issued or maintained pursuant to the Act, or under any other license or approval from any Federal agency;
- (b) could cause any undue harm or damage to the environment;
- (c) could create hazardous or unsafe conditions; or

- (d) could adversely affect sites, structures, or objects of historical, cultural, or archaeological significance, without notice to and direction from the Lessor on how to proceed.

### **Section 8: Violations, Suspensions, Cancellations, and Remedies.**

If the Lessee fails to comply with (1) any of the applicable provisions of the Act or regulations, (2) the approved SAP or COP, or (3) the terms of this lease, including associated Addenda, the Lessor may exercise any of the remedies that are provided under the Act and applicable regulations, including, without limitation, issuance of cessation of operations orders, suspension or cancellation of the lease, and/or the imposition of penalties, in accordance with the Act and applicable regulations.

The Lessor may also cancel this lease for reasons set forth in subsection 5(a)(2) of the Act (43 U.S.C. § 1334(a)(2)), or for other reasons provided by the Lessor pursuant to 30 CFR 585.437.

Non-enforcement by the Lessor of a remedy for any particular violation of the applicable provisions of the Act or regulations, or the terms of this lease, will not prevent the Lessor from exercising any remedy, including cancellation of this lease, for any other violation or for the same violation occurring at any other time.

### **Section 9: Indemnification.**

The Lessee hereby agrees to indemnify the Lessor for, and hold the Lessor harmless from, any claim caused by or resulting from any of the Lessee's operations or activities on the leased area or project easement(s) or arising out of any activities conducted by or on behalf of the Lessee or its employees, contractors (including Operator, if applicable), subcontractors, or their employees, under this lease, including claims for:

- a. loss or damage to natural resources,
- b. the release of any petroleum or any Hazardous Materials,
- c. other environmental injury of any kind,
- d. damage to property,
- e. injury to persons, and/or
- f. costs or expenses incurred by the Lessor.

Except as provided in any addenda to this lease, the Lessee will not be liable for any losses or damages proximately caused by the activities of the Lessor or the Lessor's employees, contractors, subcontractors, or their employees. The Lessee must pay the Lessor for damage, cost, or expense due and pursuant to this Section within 90 days after written demand by the Lessor. Nothing in this lease will be construed to waive any liability or relieve the Lessee from any penalties, sanctions, or claims that would otherwise apply by

statute, regulation, operation of law, or could be imposed by the Lessor or other government agency acting under such laws.

“Hazardous Material” means

1. Any substance or material defined as hazardous, a pollutant, or a contaminant under the *Comprehensive Environmental Response, Compensation, and Liability Act* at 42 U.S.C. §§ 9601(14) and (33);
2. Any regulated substance as defined by the Resource Conservation and Recovery Act (“RCRA”) at 42 U.S.C. § 6991 (7), whether or not contained in or released from underground storage tanks, and any hazardous waste regulated under RCRA pursuant to 42 U.S.C. §§ 6921 *et seq.*;
3. Oil, as defined by the Clean Water Act at 33 U.S.C. § 1321(a)(1) and the Oil Pollution Act at 33 U.S.C. § 2701(23); or
4. Other substances that applicable Federal, state, tribal, or local laws define and regulate as “hazardous.”

#### **Section 10: Financial Assurance.**

The Lessee must provide and maintain at all times a surety bond(s) or other form(s) of financial assurance approved by the Lessor in the amount specified in Addendum “B.” As required by the applicable regulations in 30 CFR Part 585, if, at any time during the term of this lease, the Lessor requires additional financial assurance, then the Lessee must furnish the additional financial assurance required by the Lessor in a form acceptable to the Lessor within 90 days after receipt of the Lessor’s notice of such adjustment.

#### **Section 11: Assignment or Transfer of Lease.**

This lease may not be assigned or transferred in whole or in part without written approval of the Lessor. The Lessor reserves the right, in its sole discretion, to deny approval of the Lessee’s application to transfer or assign all or part of this lease. Any assignment will be effective on the date the Lessor approves the Lessee’s application. Any assignment made in contravention of this section is void.

#### **Section 12: Relinquishment of Lease.**

The Lessee may relinquish this entire lease or any officially designated subdivision thereof by filing with the appropriate office of the Lessor a written relinquishment application, in accordance with applicable regulations in 30 CFR Part 585. No relinquishment of this lease or any portion thereof will relieve the Lessee or its surety of the obligations accrued hereunder, including but not limited to, the responsibility to remove property and restore the leased area and project easement(s) pursuant to section 13 of this lease and applicable regulations.



**Section 13: Removal of Property and Restoration of the Leased Area and Project Easement(s) on Termination of Lease.**

Unless otherwise authorized by the Lessor, pursuant to the applicable regulations in 30 CFR Part 585, the Lessee must remove or decommission all facilities, projects, cables, pipelines, and obstructions and clear the seafloor of all obstructions created by activities on the leased area and project easement(s) within two years following lease termination, whether by expiration, cancellation, contraction, or relinquishment, in accordance with any approved SAP, COP, or approved Decommissioning Application, and applicable regulations in 30 CFR Part 585.

**Section 14: Safety Requirements.**

The Lessee must:

- a. maintain all places of employment for activities authorized under this lease in compliance with occupational safety and health standards and, in addition, free from recognized hazards to employees of the Lessee or of any contractor or subcontractor operating under this lease;
- b. maintain all operations within the leased area and project easement(s) in compliance with regulations in 30 CFR Part 585 and orders from the Lessor and other Federal agencies with jurisdiction, intended to protect persons, property and the environment on the OCS; and
- c. provide any requested documents and records, which are pertinent to occupational or public health, safety, or environmental protection, and allow prompt access, at the site of any operation or activity conducted under this lease, to any inspector authorized by the Lessor or other Federal agency with jurisdiction.

**Section 15: Debarment Compliance.**

The Lessee must comply with the Department of the Interior's non-procurement debarment and suspension regulations set forth in 2 CFR Parts 180 and 1400 and must communicate the requirement to comply with these regulations to persons with whom it does business related to this lease by including this requirement in all relevant contracts and transactions.

**Section 16: Equal Opportunity Clause.**

During the performance of this lease, the Lessee must fully comply with paragraphs (1) through (7) of Section 202 of Executive Order 11246, as amended (reprinted in 41 CFR 60-1.4(a)), and the implementing regulations, which are for the purpose of preventing employment discrimination against persons on the basis of race, color, religion, sex, or national origin. Paragraphs (1) through (7) of Section 202 of Executive Order 11246, as amended, are incorporated in this lease by reference.

### **Section 17: Certification of Nonsegregated Facilities.**

By entering into this lease, the Lessee certifies, as specified in 41 CFR 60-1.8, that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. As used in this certification, the term "facilities" means, but is not limited to, any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees. Segregated facilities include those that are segregated by explicit directive or those that are in fact segregated on the basis of race, color, religion, sex, or national origin, because of habit, local custom, or otherwise; provided, that separate or single-user restrooms and necessary dressing or sleeping areas must be provided to assure privacy as appropriate. The Lessee further agrees that it will obtain identical certifications from proposed contractors and subcontractors prior to awarding contracts or subcontracts unless they are exempt under 41CFR 60-1.5.

### **Section 18: Notices.**

All notices or reports provided from one party to the other under the terms of this lease must be in writing, except as provided herein and in the applicable regulations in 30 CFR Part 585. Written notices and reports must be delivered to the Lessee's or Lessor's Lease Representative, as specifically listed in Addendum "A," either electronically, by hand, by facsimile, or by United States first class mail, adequate postage prepaid. Each party must, as soon as practicable, notify the other of a change to their Lessee's or Lessor's Contact Information listed in Addendum "A" by a written notice signed by a duly authorized signatory and delivered by hand or United States first class mail, adequate postage prepaid. Until such notice is delivered as provided in this section, the last recorded contact information for either party will be deemed current for service of all notices and reports required under this lease. For all operational matters, notices and reports must be provided to the party's Operations Representative, as specifically listed in Addendum "A," as well as the Lease Representative.

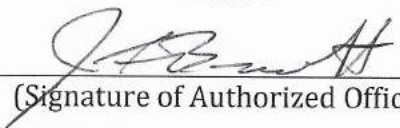
### **Section 19: Severability Clause.**

If any provision of this lease is held unenforceable, all remaining provisions of this lease will remain in full force and effect.

**Section 20: Modification.**

Unless otherwise authorized by the applicable regulations in 30 CFR Part 585, this lease may be modified or amended only by mutual agreement of the Lessor and the Lessee. No such modification or amendment will be binding unless it is in writing and signed by duly authorized signatories of the Lessor and the Lessee.

Vineyard Wind LLC  
\_\_\_\_\_  
Lessee  
  
  
\_\_\_\_\_  
(Signature of Authorized Officer)  
  
Iain Henderson  
\_\_\_\_\_  
(Name of Signatory)  
  
CFO  
\_\_\_\_\_  
(Title)  
  
February 20, 2019  
\_\_\_\_\_  
(Date)

The United States of America  
\_\_\_\_\_  
Lessor  
  
  
\_\_\_\_\_  
(Signature of Authorized Officer)  
  
James F. Bennett  
\_\_\_\_\_  
(Name of Signatory)  
Program Manager, Office of  
Renewable Energy Programs  
\_\_\_\_\_  
(Title)  
  
March 5, 2019  
\_\_\_\_\_  
(Date)

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "A"**

DESCRIPTION OF LEASED AREA AND LEASE ACTIVITIES

Lease Number OCS-A 0522

I. Lessor and Lessee Contact Information

Lessee Company Number: 15010

(a) Lessor's Contact Information

	<b>Lease Representative</b>	<b>Operations Representative</b>
Title	Program Manager	Same as Lease Representative.
Address	U.S. Department of the Interior Bureau of Ocean Energy Management 45600 Woodland Road Sterling, Virginia 20166	
Phone	(703) 787-1300	
Fax	(703) 787-1708	
Email	renewableenergy@boem.gov	

(b) Lessee's Contact Information

	<b>Lease Representative</b>	<b>Operations Representative</b>
Name	ERICH STEPHENS	SAME AS LEASE REPRESENTATIVE
Title	CDO	
Address	700 PLEASANT ST SUITE 510 NEW BEDFORD MA 02740	
Phone	(401) 487-3320	
Fax		
Email	estephens@vineyardwind.com	

II. Description of Leased Area

The total acreage of the leased area is approximately 132,370 acres.

This area is subject to later adjustment, in accordance with applicable regulations (e.g., contraction, relinquishment).

## Lease OCS-A 0522

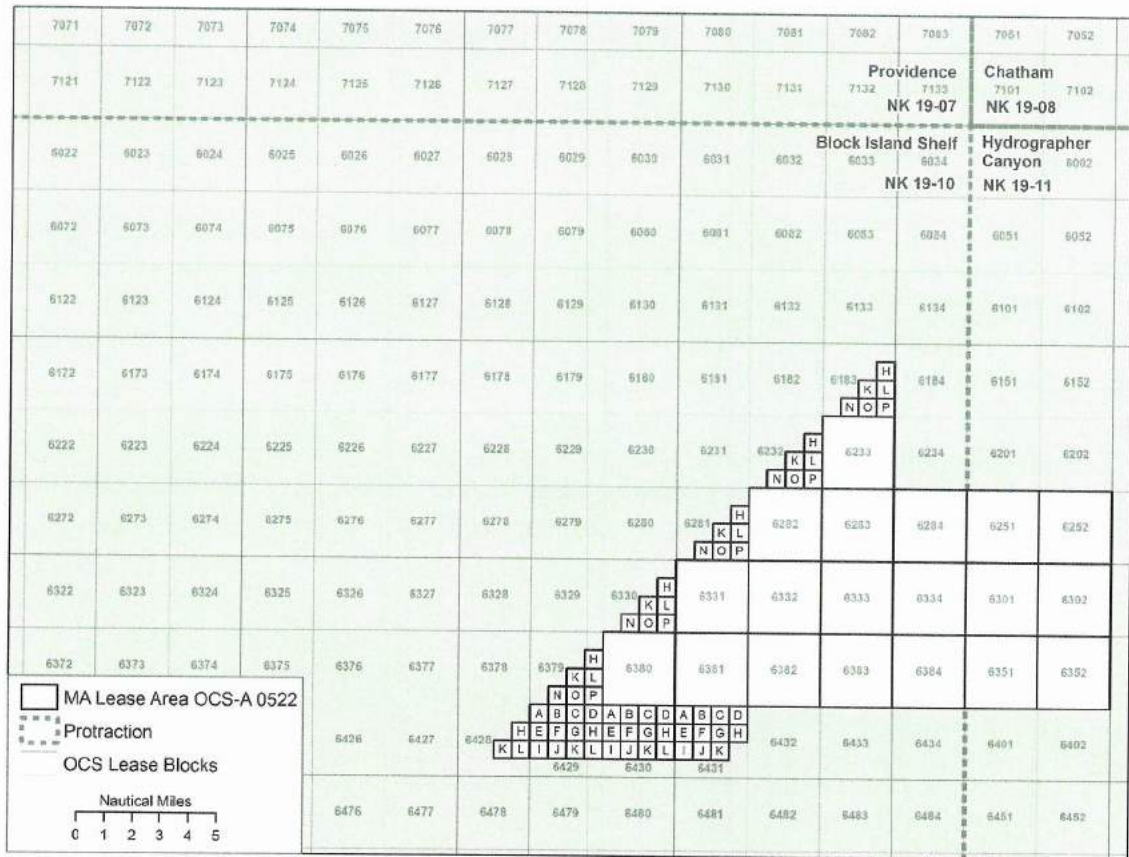
The following Blocks or portions of Blocks lying within Official Protraction Diagram Block Island Shelf NK19-10, are depicted on the map below and comprise 98,210 acres, more or less.

- 1) Block 6183, SE1/4 of NE1/4, SE1/4 of SW1/4, SE1/4
- 2) Block 6232, SE1/4 of NE1/4, SE1/4 of SW1/4, SE1/4
- 3) Block 6233, All of Block
- 4) Block 6281, SE1/4 of NE1/4, SE1/4 of SW1/4, SE1/4
- 5) Block 6282, All of Block
- 6) Block 6283, All of Block
- 7) Block 6284, All of Block
- 8) Block 6330, SE1/4 of NE1/4, SE1/4 of SW1/4, SE1/4
- 9) Block 6331, All of Block
- 10) Block 6332, All of Block
- 11) Block 6333, All of Block
- 12) Block 6334, All of Block
- 13) Block 6379, SE1/4 of NE1/4, SE1/4 of SW1/4, SE1/4
- 14) Block 6380, All of Block
- 15) Block 6381, All of Block
- 16) Block 6382, All of Block
- 17) Block 6383, All of Block
- 18) Block 6384, All of Block
- 19) Block 6428, SE1/4 of NE1/4, N1/2 of SE1/4
- 20) Block 6429, N1/2, N1/2 of S1/2
- 21) Block 6430, N1/2, N1/2 of S1/2
- 22) Block 6431, N1/2, N1/2 of SW1/4, NW1/4 of SE1/4

The following Blocks or portions of Blocks lying within Official Protraction Diagram Hydrographer Canyon NK19-11, are depicted on the map below and comprise 34,160 acres, more or less.

- 23) Block 6251, All of Block
- 24) Block 6252, All of Block
- 25) Block 6301, All of Block
- 26) Block 6302, All of Block
- 27) Block 6351, All of Block
- 28) Block 6352, All of Block

For the purposes of these calculations, a full Block is 2,304 hectares. The acreage of a hectare is 2.471043930.



Map ID: ERB-2016-1007

III. Renewable Energy Resource

Wind

IV. Description of the Project

A project to generate energy using wind turbine generators and any associated resource assessment activities, located on the Outer Continental Shelf in the leased area, as well as associated offshore substation platforms, inner array cables, and subsea export cables.

V. Description of Project Easement(s)

Once approved, the Lessor will incorporate Lessee's project easement(s) in this lease as ADDENDUM "D."

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM “B”**

LEASE TERM AND FINANCIAL SCHEDULE

Lease Number OCS-A 0522

I. Lease Term

The duration of each term of the lease is described below. The terms may be extended or otherwise modified in accordance with applicable regulations in 30 C.F.R. Part 585.

<b>Lease Term</b>	<b>Duration</b>
Preliminary Term	1 year
Site Assessment Term	5 years
Operations Term	33 years

Schedule: Addendum “C” includes a schedule and reporting requirements for conducting site characterization activities.

Renewal: The Lessee may request renewal of the operations term of this lease, in accordance with applicable regulations in 30 CFR Part 585. The Lessor, at its discretion, may approve a renewal request to conduct substantially similar activities as were originally authorized under this lease or in an approved plan. The Lessor will not approve a renewal request that involves development of a type of renewable energy not originally authorized in the lease. The Lessor may revise or adjust payment terms of the original lease as a condition of lease renewal.

II. Definitions

“Lease Issuance Date” refers to the date on which this lease has been signed by *both* the Lessee and the Lessor.

“Effective Date” has the same meaning as “effective date” in the Bureau of Ocean Energy Management (BOEM) regulations provided in 30 CFR 585.237.

“Lease Anniversary” refers to the anniversary of the Effective Date of the lease.

“End Date” refers to the earlier of a) the last calendar day of the last month of the Operations Term; or b) the date on which the lease terminates in the event of a lease termination.

“Commercial Operations” means the generation of electricity or other energy product for commercial use, sale, or distribution.

“Commercial Operation Date,” or “COD,” refers to the date on which the Lessee first begins Commercial Operations on the lease.

“Delivery Point” is the meter identified in the COP where the Lessee’s facility interconnects with the electric grid to deliver electricity for sale.

An individual wind generation turbine is said to be “available for Commercial Operations” on or after the first day that it engages in Commercial Operations on the lease; and to be no longer available for Commercial Operations on or after the day when it is permanently decommissioned. These dates are determined by the Construction and Operations Plan (COP).

### III. Payments

Unless otherwise authorized by the Lessor in accordance with the applicable regulations in 30 CFR Part 585, the Lessee must make payments as described below.

(a) **Rent.** The Lessee must pay rent as described below:

Rent payments prior to the COD, or prior to the lease End Date in the event that the lease terminates prior to the COD, are calculated by multiplying the acres in the leased area times the rental rate per acre as follows:

Lease OCS-A 0522

- Acres in Leased Area: 132,370
- Annual Rental Rate: \$3.00 per acre or fraction thereof
- Rental Fee for Entire Leased Area: \$3.00 x 132,370 = \$397,110

The first year’s rent payment of \$397,110 is due within 45 days of the date that the lease is received by the Lessee for execution. Rent for the entire leased area for the next year and for each subsequent year is due on or before each Lease Anniversary through the year in which the COD occurs. The rent for each year subsequent to the COD on the imputed portion of the lease not authorized for Commercial Operations is due on or before each Lease Anniversary. The imputed portion of the lease that is not authorized for Commercial Operations at each Lease Anniversary in year  $t$ ,  $S_t$ , and the corresponding Adjusted Annual Rent Payment will be determined as follows:

$$(A) S_t = \left( 1 - \frac{M'_t}{\text{MAX}(M'_t; \text{for all } t \geq 2)} \right)$$



(B) *Adjusted Annual Rent Payment* =  $S_t * \text{Rental Fee for Entire Leased Area}$

Where:

$S_t$  = Portion of the lease not authorized for Commercial Operations in year  $t$  based on the definition of  $t$  in Section III (b) (4) below.

$M'_t$  = Actual Nameplate capacity expressed in megawatts (MW) rounded to the nearest second decimal in year  $t$  of Commercial Operations on the lease as defined in Section III (b) (4) below, prior to any adjustments as specified in the most recent approved COP for turbine maintenance, replacements, repowering, or decommissioning. For our purposes nameplate capacity is the maximum rated electric output the turbines of the wind farm facility under commercial operations can produce at their rated wind speed designated by the turbine's manufacturer.

$MAX(M'_t)$  = Highest value of  $M'_t$  projected in the most recent approved version of the COP to be achieved in any year of Commercial Operations on the lease.

The Adjusted Annual Rent Payment calculated in Equation (A) herein, will be rounded up to the nearest dollar. The annual rent payments will be set forth in Addendum "E" when the COP is initially approved or subsequently revised.

Consider an example of a 1,000 MW project on a lease with an Effective Date of January 1, 2014 and a COD of January 1, 2022 on a lease area consisting of 100,000 acres as follows:

Payment (Jan. 1 <sup>st</sup> )	$M'_t$ (MW)	$MAX(M'_t)$ (MW)	$\left(1 - \frac{M'_t}{MAX(M'_t)}\right)$	Rental Fee for Entire Area	Payment Amount
2014	0	1,000	1.0	\$300,000	\$300,000
...	...		...		...
2021	0		1.0		\$300,000
2022	500		0.5		\$150,000
2023	500		0.5		\$150,000
2024	500		0.5		\$150,000
2025	800		0.2		\$60,000
2026	800		0.2		\$60,000
2027	800		0.2		\$60,000
2028	1,000		0.0		\$0

In the event a revised COP is approved by BOEM that identifies an alternative installation schedule that differs from the previously-approved COP, the Lessee must make subsequent payments based on the revised installation schedule. In addition, the Lessee must make a payment equal to the sum of any incremental annual rent payments that would have been due at the Lease Anniversary of prior years based on the differences between the Initial Installation Schedules specified in the previously-approved COP and the revised COP, plus interest on the annual balances, in accordance with 30 CFR 1218.54.

Consider an example whereby the initial COP specified an installation schedule with all 1,000 MW online at the COD, i.e.,  $M'_t$  is 1,000 MW at COD. The following table demonstrates how the back rent payments would be calculated if the project was initially scheduled as a

single phase, but then later determined to be the three-phase project as shown in the previous example in a revised COP approved prior to the payment due on January 1, 2023.

Payment (Jan. 1 <sup>st</sup> )	Initial $M'_t$ (MW)	Revised $M'_t$ (MW)	Single-Phase Payment Amount	Three-Phase Payment Amount	Back Rent Payment Amount	Subsequent Rent Payment Amount
2014	0	0	\$300,000	\$300,000	\$0	\$0
...	...	...	...	...	...	...
2021	0	0	\$300,000	\$300,000	\$0	\$0
2022	1,000	500	\$0	\$150,000	\$150,000	\$0
2023	1,000	500	\$0	\$150,000	\$0	\$150,000
2024	1,000	500	\$0	\$150,000	\$0	\$150,000
2025	1,000	800	\$0	\$60,000	\$0	\$60,000
2026	1,000	800	\$0	\$60,000	\$0	\$60,000
2027	1,000	800	\$0	\$60,000	\$0	\$60,000
2028	1,000	1,000	\$0	0	\$0	\$0

The last rent payment prior to Commercial Operations being authorized on the entire lease area, i.e., the year in which the value of  $S_t$  is equal to zero, or prior to the lease End Date, in the event that the lease terminates prior to Commercial Operations being authorized on the entire lease area, will represent the final rent payment, unless a revised COP identifying an alternative maximum initial capacity is approved by BOEM. All rent payments, including the last rent payment, are payable for the full year and will not be prorated to the COD or other installation milestones. The COD is equivalent to the authorization date for the first phase of development on the lease, to be updated based on the initial or revised approved COP documentation. The schedule of rent payments on the lease is defined in Addendum "E". All rent payments, except for the first 6-month rent payment, must be made as required in 30 CFR 1218.51. Late rent payments will be charged interest in accordance with 30 CFR 1218.54.

**(1) Project Easement.**

Rent for any project easement(s) is described in ADDENDUM "D".

**(2) Relinquishment.**

If the Lessee submits an application for relinquishment of a portion of the leased area within the first 45 calendar days following the date that the lease is received by the Lessee for execution, and the Lessor approves that application, no rent payment will be due on that relinquished portion of the leased area. Later relinquishments of any leased area will reduce the Lessee's rent payments due the year following the Lessor's approval of the relinquishment, through a reduction in the Acres in Leased Area and the corresponding Rental Fee for the Entire Leased Area and any related Adjusted Annual Rent Payments.

(b) **Operating Fee.** The Lessee must pay an operating fee as described below:

**(1) Initial Operating Fee Payment.**

The Lessee must pay an initial prorated operating fee within 45 calendar days after the COD. The initial operating fee payment covers the first year of Commercial Operations on the lease and will be calculated in accordance with subsection (4) below, using an operating fee rate of 0.02 and a capacity factor of 0.4.

**(2) Annual Operating Fee Payments.**

The Lessee must pay the operating fee for each subsequent year of Commercial Operations on or before each Lease Anniversary following the formula in subsection (4) below. The Lessee must calculate each operating fee annually subsequent to the initial operating fee payment using an operating fee rate of 0.02 through the thirty-three year operations term of the lease. The capacity factor of 0.4 will remain in effect until the Lease Anniversary of the year in which the Lessor adjusts the capacity factor.

**(3) Final Operating Fee Payment.**

The final operating fee payment is due on the Lease Anniversary prior to the End Date. The final operating fee payment covers the last year of Commercial Operations on the lease and will be calculated in accordance with the formula in subsection (4) below.

**(4) The formula for calculating the operating fee in year  $t$ .**

$F_t$	=	$M_t$	*	$H$	*	$C_p$	*	$P_t$	*	$r_t$
(annual operating fee)		(nameplate capacity)		(hours per year)		(capacity factor)		(power price)		(operating fee rate)

Where:

$t$ =	the year of Commercial Operations on the lease starting from each Lease Anniversary, where $t$ equals 1 represents the year beginning on the Lease Anniversary prior to, or on, the COD.
$F_t$ =	the dollar amount of the annual operating fee in year $t$ .
$M_t$ =	the nameplate capacity expressed in megawatts (MW) rounded to the nearest second decimal place in year $t$ of Commercial Operations on the lease.  The value of $M_t$ , reflecting the availability of turbines, will be determined based on the COP. This value will be adjusted to reflect any modifications to the COP approved by BOEM as of the date each operating fee payment is due, in accordance with the calculation in Equation 1, for each year of Commercial Operations on the lease.

$$(1) M_t = \sum_{w=1}^{W_t} \left( N_w * \left[ \frac{\left( \sum_{d=1}^D E_{w,t,d} \right)}{D} \right] \right)$$

Where:

$W_t$  = Number of individual wind generation turbines,  $w$ , that will be available for Commercial Operations during any day of the year,  $t$ , per the COP.

$N_w$  = Nameplate capacity of individual wind generation turbine,  $w$ , per the COP expressed in MW.

$E_{w,t,d}$  = Indicates whether individual wind generation turbine,  $w$ , will be available for Commercial Operations on day  $d$  of year  $t$ . The value is set to 1 for any day in year  $t$  for which the condition is true, i.e., the wind turbine will be available for Commercial Operations, and zero for any day in year  $t$  for which the condition is false, i.e., the wind turbine will not be available for Commercial Operations. The month of February is always assumed to have 28 days for purposes of this calculation, where March 1<sup>st</sup> will be counted as the first day of Commercial Operations if Commercial Operations commence on February 29<sup>th</sup> of a leap year.

$D$  = Days in the year set equal to 365 in all years for purposes of this calculation.

$M_t$  may be reduced only in the event that installed capacity is permanently decommissioned per the COP.  $M_t$  will not be changed in response to routine or unplanned maintenance of units, including the temporary removal of a nacelle for off-site repair or replacement with a similar unit.

**EXAMPLE:** Assume that the Lease Anniversary is January 1<sup>st</sup>, the COD is July 1, 2018, that the facility will ultimately have 100 individual wind generation turbines with a nameplate capacity of 5.0 MW each, and that the COP specifies the following, cumulative installation schedule for wind turbines to become available for Commercial Operations:

- July 1, 2018 (COD): 20 turbines (20 new units);
- October 1, 2018: 45 turbines (25 new units);
- January 1, 2019: 50 turbines (5 new units);
- July 1, 2019: 65 turbines (15 new units);
- January 1, 2020: 95 turbines (30 new units);
- February 29, 2020: 100 turbines (5 new units).

Further assume that the COP calls for 50 of the turbines to be decommissioned after September 30, 2039 ( $t = 22$ ), and that the remaining turbines are decommissioned at

the End Date of March 15, 2040 ( $t = 23$ ).

The value of  $M_t$  would be estimated as demonstrated in Table 1a for each year of Commercial Operations on the lease in this example.

**Table 1a: Example of  $M_t$  Calculations for Installation and Decommissioning**

$t$	Turbines	MW	Commercial Operations Period	Comm. Ops. Days	Days in Year	Share of Days	MW	$M_t$
1	20	100	Jul. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	184	365	50.41%	50.41	81.92
	25	125	Oct. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	92		25.21%	31.51	
2	50	250	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	250.00	287.81
	15	75	Jul. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	184		50.41%	37.81	
3	95	475	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	475.00	495.96
	5	25	Mar. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	306		83.84%	20.96	
4	100	500	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	500.00	500.00
...	...	...	...	...		...	...	...
21	100	500	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	500.00	500.00
22	50	250	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	250.00	436.98
	50	250	Jan. 1 <sup>st</sup> to Sep. 30 <sup>th</sup>	273		74.79%	186.98	
23	50	250	Jan. 1 <sup>st</sup> to Mar. 15 <sup>th</sup>	74	20.27%	50.68	50.68	

To illustrate the impact of decommissioning a portion of the individual wind generation turbines and replacing them with units of greater capacity on the calculation of  $M_t$ , assume that at the end of March 31, 2022, 10 units are to be made unavailable due to decommissioning, and that the incremental units have a capacity of 7.0 MW and are expected to be made available for Commercial Operations on September 15, 2022. The impact on  $M_t$  in 2022 and in subsequent years starting in 2023 and continuing until decommissioning is illustrated in Table 1b.

**Table 1b: Example of  $M_t$  Calculations for Repowering**

$t$	Turbines	MW	Commercial Operations Period	Comm. Ops. Days	Days in Year	Share of Days	MW	$M_t$
5	90 (5.0)	450	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365	365	100.00%	450.00	483.04
	10 (5.0)	50	Jan. 1 <sup>st</sup> to Mar. 31 <sup>st</sup>	90		24.66%	12.33	
	10 (7.0)	70	Sep. 15 <sup>th</sup> to Dec. 31 <sup>st</sup>	108		29.59%	20.71	
6	90 (5.0)	450	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365	100.00%	450.00	520.00	
	10 (7.0)	70	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365	100.00%	70.00		

$H =$  the number of hours in the year for billing purposes which is equal to 8,760 for all years of Commercial Operations on the lease.

$C_p =$  the "Capacity Factor" in Performance Period  $p$ , which represents the share of anticipated generation of the facility that is delivered to where the Lessee's facility interconnects with the electric grid (i.e. the Delivery Point) relative to its generation at continuous full power operation at the nameplate capacity, expressed as a decimal between zero and one.

The initial Capacity Factor ( $C_0$ ) will be set to 0.4.

The Capacity Factor will be subject to adjustment at the end of each Performance Period. After the sixth year of Commercial Operations on the lease has concluded, the Lessee will utilize data gathered from years two through six of Commercial Operations on the lease and propose a revised Capacity Factor to be used to calculate subsequent annual payments, as provided for in Table 2 below. A similar process will be conducted at the conclusion of each five-year Performance Period, thereafter.

**Table 2: Definition of Performance Periods**

Performance Period ( $p$ )	Commercial Operation Years ( $t$ )	Payments Affected by Adjustment	Capacity Factor ( $c$ )	Date End Year ( $n$ )
0 (COD)	Not Applicable	Payments 1 to 7	$C_0=0.4$	--
1	$t = 2$ to 6	Payments 8 to 12	$C_1$	$n_1=6$
2	$t = 7$ to 11	Payments 13 to 17	$C_2$	$n_2=11$
3	$t = 12$ to 16	Payments 18 to 22	$C_3$	$n_3=16$
4	$t = 17$ to 21	Payments 23 to 27	$C_4$	$n_4=21$
5	$t = 22$ to 26	Payments 28 to 32	$C_5$	$n_5=26$
6	$t = 27$ to 31	Payment 33	$C_6$	$n_6=31$

**Adjustments to the Capacity Factor**

The Actual 5-year Average Capacity Factor ( $X_p$ ) is calculated for each Performance Period after COD ( $p > 0$ ) per Equation 2 below.  $X_p$  represents the sum of actual, metered electricity generation in megawatt-hours (MWh) at the Delivery Point to the electric grid ( $A_t$ ) divided by the amount of electricity generation in MWh that would have been produced if the facility operated continuously at its full, stated capacity ( $M_t$ ) in all of the hours ( $h_t$ ) in each year,  $t$ , of the corresponding five-year period.

$$(2) X_p = \left( \frac{\sum_{t=n-4}^n A_t}{\sum_{t=n-4}^n M_t * h_t} \right)$$

Where:

$M_t$  = Nameplate Capacity as defined above.

$n$  = "Date End Year" value for the Performance Period,  $p$ , as defined in Table 2.

$p$  = Performance Period as defined in Table 2.

$A_t$  = Actual generation in MWh associated with each year of Commercial Operations,  $t$ , on the lease that is transferred at the Delivery Point; Delivery Point meter data supporting the values submitted for annual actual generation must be recorded, preserved, and timely provided to the Lessor upon request. In the event the Lessor requires the assistance of the Lessee in obtaining information useful in verifying

	<p>such information, for example by waiving confidentiality with respect to data held by a third party, such assistance must be timely provided.</p> <p><math>h_t</math> = Hours in the year on which the Actual Generation associated with each year of Commercial Operations, <math>t</math>, on the lease is based; this definition of “hours in the year” differs from the definition of <math>H</math> in the operating fee equation above. The hours in the year for purposes of calculating the capacity factor must take into account the actual number of hours, including those in leap years.</p> <p>The value of the Capacity Factor at the outset of Commercial Operations (<math>p = 0</math>) is set to 0.4 as stated in equation 3:</p> <p><b>(3)</b> <math>c_0 = 0.4</math></p> <p>The value of the Capacity Factor corresponding to each Performance Period (<math>c_p</math>) is set according to equations 4A, 4B, and 4C as follows for each value of <math>p</math> greater than zero. The Capacity Factor is set equal to the Actual 5-Year Average Capacity Factor provided that the value falls within a range of plus or minus 10 percent of the previous Performance Period’s capacity factor.</p> <p><b>(4A)</b> <math>c_p = X_p</math> for <math>c_{p-1} * 0.90 \leq X_p \leq c_{p-1} * 1.10</math></p> <p><b>(4B)</b> <math>c_p = c_{p-1} * 0.90</math> for <math>X_p &lt; c_{p-1} * 0.90</math></p> <p><b>(4C)</b> <math>c_p = c_{p-1} * 1.10</math> for <math>X_p &gt; c_{p-1} * 1.10</math></p> <p>All values for <math>c_p</math> must be rounded to the nearest third decimal place.</p>
<p><math>P_t =</math></p>	<p>a measure of the annual average wholesale electric power price expressed in dollars per MW hour.</p> <p>The Lessee must calculate <math>P_t</math> at the time each operating fee payment is due, subject to approval by the Lessor. The Base Price (<math>P_b</math>) must equal the weighted average of the peak and off-peak spot price indices for the Northeast – Massachusetts Hub power market for the most recent year of data available as reported by the Federal Energy Regulatory Commission (FERC). If FERC stops publishing this data or the specified location of the data changes over time, the Lessor must specify an alternate source of data and methodology that is approximately equivalent.</p> <p>The peak and off-peak price indices must be weighted 52.0% and 48.0%, respectively, for purposes of estimating the weighted index value for the Base Price. For example, in the March 12, 2012 State of the Markets Report the peak price index for 2011 was \$51.99/MWh and the corresponding off-peak price index for 2011 was \$33.94/MWh, resulting in a weighted index value for the Base Price for 2011 (<math>P_{2011}</math>) of \$43.33/MWh (<math>=52.0\% * \\$51.99 / \text{MWh} + 48.0\% * \\$33.94 / \text{MWh}</math>). The calculation of <math>P_b</math> must be</p>

rounded up to the nearest, second decimal place.

The Base Price must be adjusted for inflation from the year associated with the published spot prices to the year in which the operating fee is to be paid as shown in equations (5A) and (5B):

$$(5A) P_t = P_b * \left( \frac{GDP_g}{GDP_{g-1}} \right)^{y-g} * \left( \frac{GDP_g}{GDP_b} \right) \text{ for } g \geq b$$

$$(5B) P_t = P_b * \left( \frac{GDP_g}{GDP_{g-1}} \right)^{y-b} \text{ for } g < b$$

Where:

*GDP* = Annual Implicit Price Deflators for Gross Domestic Product (GDP deflator index) published by the U.S. Bureau of Economic Analysis (BEA) for the specified period.

If BEA stops publishing the data required for this calculation, or the specified location of the data changes over time, the Lessor will specify an alternative source of data and methodology that it considers approximately equivalent.

*b* = The most recent year for which FERC reports the appropriate electricity spot price data expressed as the year, e.g., 2009, as in the illustrative example below.

*g* = The most recent year for which GDP deflator indices are available from BEA expressed as the year, e.g., 2011, as in the illustrative example below.

*y* = The year the annual payment is due expressed as the year corresponding to the value of *t* described above, e.g., 2013, as in the illustrative example below.

The second term on the right-hand side of equation (5A) represents a projected annual change in the index of inflation employing the last year of data available from BEA, while the third term represents the cumulative change in the index of inflation up to the previous year.

**Example:**

The following hypothetical example is provided to illustrate the methodology using Equation (5A) and the illustrative values provided for *b*, *g*, and *y* above, applied to historical GDP deflator data. If the actual FERC price indices are based on 2009 data and the GDP deflator indices are available for 2011, the inflation-adjusted price index value would be determined from equation (5A) as follows for a payment occurring in *y* = 2013:



	$P_{t(2013)} = P_{2009} * \left( \frac{GDP_{2011}}{GDP_{2010}} \right)^{2013-2011} * \left( \frac{GDP_{2011}}{GDP_{2009}} \right) = \frac{\$38.40}{\text{MWh}} * \left( \frac{113.361}{110.992} \right)^2 * \left( \frac{113.361}{109.729} \right) = \frac{\$41.38}{\text{MWh}}$ <p>Note: The current GDP deflator index is 113.361 for 2011, 110.992 for 2010, and 109.729 for 2009 (last revised by BEA on April 27, 2012); the FERC index price for the year 2009 is \$38.40/MWh (On-peak: \$44.60/MWh; Off-peak: \$31.68/MWh; last revised March 12, 2012). Although 2011 FERC prices are available, the 2009 prices are used in the example to illustrate the concept.</p> <p>The Lessor and the Lessee will use the latest FERC price indices and revised BEA GDP deflator index values at the time the pricing adjustments are made. The source of data used in the calculations must be noted in the Lessee's documentation supporting their estimate of the value of <math>P_t</math> each year for review and approval by the Lessor.</p>
$r_t =$	the operating fee rate of 0.02 (2%).

**(c) Reporting, Validation, Audits, and Late Payments.**

The Lessee must submit the values used in the operating fee formula to the Lessor at the time the annual payment based on these values is made. Submission of this and other reporting, validation, audit and late payment information as requested by the Lessor must be sent to the Lessor using the contact information indicated in Addendum "A", unless the Lessor directs otherwise. Failure to submit the estimated values and the associated documentation on time to the Lessor may result in penalties as specified in applicable regulations.

Within 60 days of the submission by the Lessee of the annual payment, the Lessor will review the data submitted and validate that the operating fee formula was applied correctly. If the Lessor validation results in a different operating fee amount, the amount of the annual operating fee payment will be revised to the amount determined by the Lessor.

The Lessor also reserves the right to audit the meter data upon which the Actual 5-year Average Capacity Factor is based at any time during the lease term. If, as a result of such audit, the Lessor determines that any annual operating fee payment was calculated incorrectly, the Lessor has the right to correct any errors and collect the correct annual operating fee payment amount.

If the annual operating fee is revised downward as a result of the Lessee's calculations, as validated by the Lessor, or an audit of meter data conducted by the Lessee or Lessor, the Lessee will be refunded the difference between the amount of the payment received and the amount of the revised annual operating fee, without interest. Similarly, if the payment amount is revised upward, the Lessee is required to pay the difference between the amount

of the payment received and the amount of the revised annual operating fee, plus interest on the balance, in accordance with 30 CFR § 1218.54.

Late operating fee payments will be charged interest in accordance with 30 CFR § 1218.54.

#### IV. Financial Assurance

The Lessor will base the determination for the amounts of all Site Assessment Plan (SAP), COP, and decommissioning financial assurance requirements on estimates of the cost to meet all accrued lease obligations. The Lessor determines the amount of supplemental and decommissioning financial assurance requirements on a case-by-case basis. The amount of financial assurance required to meet all lease obligations includes:

- (a) **Initial Financial Assurance.** Prior to the Lease Issuance date, the Lessee must provide an initial lease-specific bond, or other approved means of meeting the Lessor's initial financial assurance requirements in an amount equal to \$100,000.
- (b) **Additional Financial Assurance.** In addition to the initial lease-specific financial assurance discussed above, the Lessee is also required to provide additional supplemental bonds associated with the SAP and COP, or other form of financial assurances and a decommissioning bond or other approved means of meeting the Lessee's decommissioning obligations.
  - (1) Prior to the Lessor's approval of a SAP, the Lessor will require an additional supplemental bond or other form of financial assurance in an amount determined by the Lessor based on the complexity, number, and location of all facilities involved in the site assessment activities planned in the SAP, and estimates of the costs to meet all accrued obligations, in accordance with applicable BOEM regulations (30 CFR 585.515-537). The supplemental financial assurance requirement is in addition to the initial lease-specific financial assurance in the amount of \$100,000. The Lessee may meet these obligations by providing a new bond or other acceptable form of financial assurance, or increasing the amount of its existing bond or other form of financial assurance.
  - (2) Prior to the Lessor's approval of a COP, the Lessor may require an additional supplemental bond or other form of financial assurance in an amount determined by the Lessor based on the complexity, number, location of all facilities, activities and Commercial Operations planned in the COP, and estimates of the costs to meet all accrued obligations, in accordance with applicable BOEM regulations (30 CFR 585.515-537). The supplemental financial assurance requirement is in addition to the initial lease-specific financial assurance in the amount of \$100,000 and an additional supplemental bond or other form of financial assurance required with the SAP. The Lessee may meet this obligation by providing a new bond or other acceptable form of financial assurance, or increasing the amount of its existing bond or other form of financial assurance.

- (3) The Lessor will require a decommissioning bond or other form of financial assurance based on the anticipated decommissioning costs in accordance with applicable BOEM regulations (30 CFR 585.515-537). The decommissioning obligation must be guaranteed through an acceptable form of financial assurance and will be due according to the schedule beginning before commencement of the installation of commercial facilities on a date or dates to be determined by the Lessor.
- (c) **Adjustments to Financial Assurance Amounts.** The Lessor reserves the right to adjust the amount of any financial assurance requirement (initial, supplemental, or decommissioning) associated with this lease and/or reassess the Lessee's cumulative lease obligations, including decommissioning obligations, at any time. If the Lessee's cumulative lease obligations and/or liabilities increase or decrease, the Lessor will notify the Lessee of any intended adjustment to the financial assurance requirements and provide the Lessee an opportunity to comment in accordance with applicable BOEM regulations.

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "C"**

LEASE-SPECIFIC TERMS, CONDITIONS, AND STIPULATIONS

Lease Number OCS-A 0522

The Lessee's rights to conduct activities on the leased area are subject to the following terms, conditions, and stipulations. The Lessor reserves the right to impose additional terms and conditions incident to the future approval or approval with modifications of plans, such as a Site Assessment Plan (SAP) or Construction and Operations Plan (COP).

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## 1 DEFINITIONS

- 1.1 Definition of "Archaeological Resource": The term "archaeological resource" has the same meaning as "archaeological resource" in the Bureau of Ocean Energy Management (BOEM) regulations provided in 30 CFR 585.112.
- 1.2 Definition of "Dynamic Management Area (DMA)": The term "DMA" refers to a temporary area designated by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and consisting of a circle around a confirmed North Atlantic right whale sighting. The radius of this circle expands incrementally with the number of whales sighted, and a buffer is included beyond the core area to allow for whale movement. Mandatory or voluntary speed restrictions may be applied by NOAA NMFS within DMAs. Information regarding the location and status of applicable DMAs is available from the NMFS Office of Protected Resources.
- 1.3 Definition of "Effective Date": The term "Effective Date" has the same meaning as "effective date" in BOEM regulations provided in 30 CFR 585.237.
- 1.4 Definition of "Geological and Geophysical Survey (G&G Survey)": The term "G&G Survey" serves as a collective term for surveys that collect data on the geology of the seafloor and landforms below the seafloor. High resolution geophysical surveys and geotechnical (sub-bottom) exploration are components of G&G surveys.
- 1.5 Definition of "Geotechnical Exploration": The term "Geotechnical Exploration," also referred to as "Sub-bottom Sampling," or "Geotechnical Testing," is used to collectively refer to site specific sediment and underlying geologic data acquired from the seafloor and the sub-bottom and includes geotechnical surveys utilizing deep borings, vibracores, and cone penetration tests.
- 1.6 Definition of "High Resolution Geophysical Survey (HRG Survey)": The term "HRG 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.
- 1.7 Definition of "Protected Species": The term "protected species" includes marine mammals (those protected under the Endangered Species Act and those protected under the Marine Mammal Protection Act), sea turtles, sturgeon, and giant manta ray.
- 1.8 Definition of "Protected-Species Observer": The term "protected-species observer," or "PSO," means an individual who is trained in the shipboard identification and behavior of protected species.

- 1.9 Definition of “Ramp-up”: The term “ramp-up” means the process of incrementally increasing the acoustic source level of the survey equipment when conducting HRG surveys until it reaches the operational setting.
- 1.10 Definition of “Site Assessment Activities”: The term “site assessment activities” or “site assessment,” has the same meaning as “site assessment activities” in 30 CFR 585.112.
- 1.11 Definition of “Qualified Marine Archaeologist”: The term “qualified marine archaeologist” means a person retained by the Lessee who meets the Secretary of the Interior’s Professional Qualifications Standards for Archaeology (48 FR 44738-44739), and has experience analyzing marine geophysical data.

## **2 SCHEDULE**

### **2.1 Site Characterization**

- 2.1.1 Survey Plan(s). Prior to conducting survey activities in support of the submission of a plan, the Lessee must submit to the Lessor at least one complete survey plan. Each distinct survey effort (e.g., mobilization) must be addressed by a survey plan, although a single survey plan may cover more than one effort. Each survey plan must include details and timelines of the surveys to be conducted on this lease necessary to support the submission of a plan (i.e., necessary to satisfy the information requirements in the applicable regulations, including but not limited to 30 CFR 585.606, 610, 611, 621, 626, 627). Each survey plan must include a description of historic property identification surveys that will be conducted to gather the information required by BOEM to complete review of a plan under the National Historic Preservation Act (e.g., offshore and onshore archaeological surveys and surveys within the viewshed of proposed renewable energy structures). Each survey plan must be consistent with the Lessee’s Fisheries Communication Plan (see 4.1.3) and include a description of the Lessee’s intentions to coordinate with the U.S. Coast Guard to prepare a Notice to Mariners for the specific survey activities described in the survey plan.

The Lessee must submit each survey plan to the Lessor at least 30 calendar days prior to the date of the required pre-survey meeting with the Lessor (See 2.1.2). Prior to the commencement of any survey activities described in the survey plan, the Lessee must modify each survey plan to address any comments the Lessor submits to the Lessee on the contents of the survey plan in a manner deemed satisfactory by the Lessor.

2.1.2 Pre-Survey Meeting(s) with the Lessor. At least 60 days prior to the initiation of survey activities in support of the submission of a plan (i.e., SAP and/or COP), the Lessee must hold a pre-survey meeting with the Lessor to discuss the applicable proposed survey plan and timelines. The Lessee must ensure the presence at this meeting of a Qualified Marine Archaeologist and any other relevant subject matter experts (e.g., terrestrial archaeologist, architectural historians) related to the proposed historic property identification surveys described in the survey plan unless otherwise authorized by the Lessor. The Lessor may request the presence of other relevant subject matter experts at this meeting.

## 2.2 Progress Reporting

2.2.1 Semi-Annual Progress Report. The Lessee must submit to the Lessor a semi-annual (i.e., every six months) progress report through the duration of the site assessment term that includes a brief narrative of the overall progress since the last progress report, or – in the case of the first report – since the Effective Date. The progress report must include an update regarding progress in executing the activities included in the survey plan(s), and include as an enclosure an updated survey plan(s) accounting for any modifications in schedule.

## 3 NATIONAL SECURITY AND MILITARY OPERATIONS

The Lessee must comply with the requirements specified in stipulations 3.1, 3.2 and 3.3 when conducting site characterization activities in support of plan (i.e., SAP and/or COP) submittal.

### 3.1 Hold and Save Harmless

Whether compensation for such damage or injury might be due under a theory of strict or absolute liability or otherwise, the Lessee assumes all risks of damage or injury to persons or property, which occur in, on, or above the Outer Continental Shelf (OCS), to any persons or to any property of any person or persons in connection with any activities being performed by the Lessee in, on, or above the OCS, if such injury or damage to such person or property occurs by reason of the activities of any agency of the United States Government, its contractors, or subcontractors, or any of its officers, agents or employees, being conducted as a part of, or in connection with, the programs or activities of the individual military command headquarters (hereinafter “the appropriate command headquarters”) listed in the contact information provided as an enclosure to this lease.

Notwithstanding any limitation of the Lessee's liability in Section 9 of the lease, the Lessee assumes this risk whether such injury or damage is caused in whole or in part by any act or omission, regardless of negligence or fault, of the United States, its contractors or subcontractors, or any of its officers, agents, or employees. The Lessee further agrees to indemnify and save harmless the United States against all claims for loss, damage, or injury in connection with the programs or activities of the command headquarters, whether the same be caused in whole or in part by the negligence or fault of the United States, its contractors, or subcontractors, or any of its officers, agents, or employees and whether such claims might be sustained under a theory of strict or absolute liability or otherwise.

### 3.2 **Evacuation or Suspension of Activities**

- 3.2.1 **General.** The Lessee hereby recognizes and agrees that the United States reserves and has the right to temporarily suspend operations and/or require evacuation on this lease in the interest of national security pursuant to Section 3(c) of this lease.
- 3.2.2 **Notification.** Every effort will be made by the appropriate military agency to provide as much advance notice as possible of the need to suspend operations and/or evacuate. Advance notice will normally be given before requiring a suspension or evacuation. Temporary suspension of operations may include, but is not limited to the evacuation of personnel and appropriate sheltering of personnel not evacuated. "Appropriate sheltering" means the protection of all Lessee personnel for the entire duration of any Department of Defense activity from flying or falling objects or substances and will be implemented by an order (oral and/or written) from the BOEM Office of Renewable Energy Programs (OREP) Program Manager, after consultation with the appropriate command headquarters or other appropriate military agency, or higher Federal authority. The appropriate command headquarters, military agency, or higher authority will provide information to allow the Lessee to assess the degree of risk to, and provide sufficient protection for, the Lessee's personnel and property.
- 3.2.3 **Duration.** Suspensions or evacuations for national security reasons will not generally exceed seventy-two (72) hours; however, any such suspension may be extended by order of the OREP Program Manager. During such periods, equipment may remain in place, but all operations, if any, must cease for the duration of the temporary suspension if so directed by the OREP Program Manager. Upon cessation of any temporary suspension, the OREP Program Manager will immediately notify the Lessee such suspension has terminated and operations on the leased area can resume.
- 3.2.4 **Lessee Point-of-Contact for Evacuation/Suspension Notifications.** The Lessee must inform the Lessor of the persons/offices to be notified to implement the terms of 3.2.2 and 3.2.3.



- 3.2.5 Coordination with Command Headquarters. The Lessee must establish and maintain early contact and coordination with the appropriate command headquarters, in order to avoid or minimize the potential to conflict with and minimize the potential effects of conflicts with military operations.
- 3.2.6 Reimbursement. The Lessee is not entitled to reimbursement for any costs or expenses associated with the suspension of operations or activities or the evacuation of property or personnel in fulfillment of the military mission in accordance with 3.2.1 through 3.2.5 above.

### 3.3 **Electromagnetic Emissions**

The Lessee, prior to entry into any designated defense operating area, warning area, or water test area, for the purpose of commencing survey activities undertaken to support SAP or COP submittal must enter into an agreement with the commander of the appropriate command headquarters to coordinate the electromagnetic emissions associated with such survey activities. The Lessee must ensure that all electromagnetic emissions associated with such survey activities are controlled as directed by the commander of the appropriate command headquarters.

## 4 **STANDARD OPERATING CONDITIONS**

### 4.1 **General**

- 4.1.1 Vessel Strike Avoidance Measures. The Lessee must ensure that all vessels conducting activities in support of plan (i.e., SAP and COP) submittal, including those transiting to and from local ports and the lease area, comply with the vessel-strike avoidance measures specified in stipulations 4.1.1.1 through 4.1.1.8.3, except under extraordinary circumstances when complying with these requirements would put the safety of the vessel or crew at risk.
- 4.1.1.1 The Lessee must ensure that vessel operators and crews maintain a vigilant watch for marine mammals (whales, dolphins, porpoises, seals), sea turtles, and giant manta rays, and slow down or stop their vessel to avoid striking these protected species.
- 4.1.1.2 The Lessee must ensure that vessels 19.8 meters (m) (65 feet [ft]) in length or greater that operate between November 1 through July 31, operate at speeds of 10 knots (11.5 mph) or less.
- 4.1.1.3 The Lessee must ensure that vessel operators monitor NMFS North Atlantic Right Whale reporting systems (e.g., the Early Warning System, Sighting Advisory System, and Mandatory Ship Reporting System) from November 1 through July 31 and whenever a DMA is established within any area vessels operate.
- 4.1.1.4 The Lessee must ensure that all vessel operators comply with 10 knot (18.5 kilometers per hour [km/hr]) speed restrictions in any DMA.

4.1.1.5 The Lessee must ensure that all vessel operators reduce vessel speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of marine mammals are observed near an underway vessel.

4.1.1.6 North Atlantic Right Whales.

4.1.1.6.1 The Lessee must ensure all vessels maintain a separation distance of 500 m (1,640 ft) or greater from any sighted North Atlantic right whale or unidentified large marine mammal.

4.1.1.6.2 The Lessee must ensure that the following avoidance measures are taken if a vessel comes within 500 m (1,640 ft) of any North Atlantic right whale:

4.1.1.6.2.1 If underway, any vessel must steer a course away from any North Atlantic right whale at 10 knots ( 18.5 km/h) or less until the 500 m (1,640 ft) minimum separation distance has been established (except as provided in 4.1.1.6.2.2).

4.1.1.6.2.2 If a North Atlantic right whale is sighted within 100 m (328 ft) to an underway vessel, the vessel operator must immediately reduce speed and promptly shift the engine to neutral. The vessel operator must not engage the engines until the North Atlantic right whale has moved beyond 100 m (328 ft), at which point the Lessee must comply with 4.1.1.6.2.1.

4.1.1.6.2.3 If a vessel is stationary, the vessel must not engage engines until the North Atlantic right whale has moved beyond 100 m (328 ft), at which point the Lessee must comply with 4.1.1.6.2.1.

4.1.1.7 Large Whales other than the North Atlantic Right Whale.

4.1.1.7.1 The Lessee must ensure all vessels maintain a separation distance of 100 m (328 ft) or greater from any sighted Endangered Species Act (ESA)-listed whales or humpback whales.

4.1.1.7.2 The Lessee must ensure that the following avoidance measures are taken if a vessel comes within 100 m (328 ft) of whale:

4.1.1.7.2.1 If underway, the vessel must reduce speed and shift the engine to neutral, and must not engage the engines until the whale has moved beyond 100 m (328 ft).

4.1.1.7.2.2 If stationary, the vessel must not engage engines until the whale has moved beyond 100 m (328 ft).

4.1.1.8 Small Cetaceans (Dolphins and Porpoises), Seals, Giant Manta Rays, and Sea Turtles.

4.1.1.8.1 The Lessee must ensure that all vessels underway do not divert to approach any small cetacean, seal, sea turtle, or giant manta ray.

- 4.1.1.8.2 The Lessee must ensure that all vessels maintain a separation distance of 50 meters (164 ft) or greater from any sighted small cetacean, seal, sea turtles, or giant manta ray, except when a small cetacean or seal approaches the vessel, in which case, the Lessee must follow 4.1.1.8.3 below.
- 4.1.1.8.3 If a small cetacean or seal approaches any vessel underway, the vessel underway must avoid excessive speed or abrupt changes in direction to avoid injury to the animal.
- 4.1.1.9 Vessel Operator Briefing. The Lessee must ensure that all vessel operators are briefed to ensure they are familiar with the requirements specified in 4.1.1.
- 4.1.2 Marine Trash and Debris Prevention. The Lessee must ensure that vessel operators, employees, and contractors actively engaged in activity in support of a plan (i.e., SAP and COP) submittal are briefed on marine trash and debris awareness and elimination, as described in the BSEE NTL No. 2015-G03 (“Marine Trash and Debris Awareness and Elimination”) or any NTL that supersedes this NTL, except that the Lessor will not require the Lessee to post placards. The Lessee must ensure that these vessel operator employees and contractors receive training on the environmental and socioeconomic impacts associated with marine trash and debris and their responsibilities for ensuring that trash and debris are not intentionally or accidentally discharged into the marine environment. Briefing materials on marine debris awareness, elimination, and protected species are available at <http://oocmain.theooc.us/page41.html>.
- 4.1.3 Fisheries Communications Plan (FCP) and Fisheries Liaison. The Lessee must develop a publicly available FCP that describes the strategies that the Lessee intends to use for communicating with fisheries stakeholders prior to and during activities in support of the submission of a plan. The FCP must include the contact information for an individual retained by the Lessee as its primary point of contact with fisheries stakeholders (i.e., Fisheries Liaison). If the Lessee does not develop a project website, the FCP must be made available to the Lessor and the public upon request.
- 4.1.4 Entanglement Avoidance.
- 4.1.4.1 The Lessee must ensure that any structures or devices attached to the seafloor for continuous periods greater than 24 hours use the best available mooring systems for minimizing the risk of entanglement or entrapment of marine mammals, manta rays and sea turtles, while still ensuring the safety and integrity of the structure or device. The best available mooring system may include, but is not limited to, vertical and float lines (chains, cables, or coated rope systems), swivels, shackles, and anchor designs.
- 4.1.4.2 All mooring lines and ancillary attachment lines must use one or more of the following measures to reduce entanglement risk: shortest practicable line length, rubber sleeves,

weak-links, chains, cables or similar equipment types that prevent lines from looping or wrapping around animals, or entrapping protected species.

- 4.1.4.3 Any equipment must be attached by a line within a rubber sleeve for rigidity. The length of the line must be as short as necessary to meet its intended purpose.
- 4.1.4.4 If an entangled live or dead marine protected species is reported, the Lessee must provide any assistance to authorized stranding response personnel as requested by BOEM or NMFS.

## 4.2 Archaeological Survey Requirements

- 4.2.1 Archaeological Survey Required. The Lessee must provide the results of an archaeological survey with its plans.
- 4.2.2 Qualified Marine Archaeologist. The Lessee must ensure that the analysis of archaeological survey data collected in support of plan (e.g., SAP and/or COP) submittal and the preparation of archaeological reports in support of plan submittal are conducted by a Qualified Marine Archaeologist.
- 4.2.3 Tribal Pre-Survey Meeting. The Lessee must invite by certified mail the Narragansett Indian Tribe, the Mashpee Wampanoag Tribe, and the Wampanoag Tribe of Gay Head (Aquinnah) to a tribal pre-survey meeting. The purpose of this meeting will be for the Lessee and the Lessee's Qualified Marine Archaeologist to discuss the Lessee's Survey Plan and consider requests to monitor portions of the archaeological survey and the geotechnical exploration activities, including the visual logging and analysis of geotechnical samples (e.g., cores, etc.). The meeting must be held subsequent to the pre-survey meeting with the Lessor (see 2.1.2). Invitation to the tribal pre-survey meeting must be made at least 15 calendar days prior to the date of the proposed tribal pre-survey meeting. The meeting must be scheduled for a date at least 30 calendar days prior to commencement of survey activities performed in support of plan submittal and at a location and time that affords the participants a reasonable opportunity to participate. The anticipated date for the meeting must be identified in the timeline of activities described in the applicable survey plan (see 2.1.1).
- 4.2.4 Geotechnical Exploration. The Lessee may only conduct geotechnical exploration activities performed in support of plan (i.e., SAP and/or COP) submittal in locations where an analysis of the results of geophysical surveys has been completed. This analysis must include a determination by a Qualified Marine Archaeologist as to whether any potential archaeological resources are present in the area. Except as allowed by the Lessor under 4.2.6, the geotechnical exploration activities must avoid potential archaeological resources by a minimum of 50 m (164 ft), and the avoidance distance must be calculated from the maximum discernible extent of the archaeological resource. A Qualified Marine Archaeologist must certify, in the

Lessee's archaeological reports, that geotechnical exploration activities did not impact potential historic properties identified as a result of the HRG surveys performed in support of plan submittal, except as follows: in the event that the geotechnical exploration activities did impact potential historic properties identified in the archaeological surveys without the Lessor's prior approval, the Lessee and the Qualified Marine Archaeologist who prepared the report must instead provide a statement documenting the extent of these impacts.

- 4.2.5 Monitoring and Avoidance. The Lessee must inform the Qualified Marine Archaeologist that he or she may be present during HRG surveys and bottom-disturbing activities performed in support of plan (i.e., SAP and/or COP) submittal to ensure avoidance of potential archaeological resources, as determined by the Qualified Marine Archaeologist (including bathymetric, seismic, and magnetic anomalies; side scan sonar contacts; and other seafloor or sub-surface features that exhibit potential to represent or contain potential archaeological sites or other historic properties). In the event that this Qualified Marine Archaeologist indicates that he or she wishes to be present, the Lessee must facilitate the Qualified Marine Archaeologist's presence, as requested by the Qualified Marine Archaeologist, and provide the Qualified Marine Archaeologist the opportunity to inspect data quality.
- 4.2.6 No Impact without Approval. In no case may the Lessee knowingly impact a potential archaeological resource without the Lessor's prior approval.
- 4.2.7 Post-Review Discovery Clauses. If the Lessee, while conducting geotechnical exploration or any other bottom-disturbing site characterization activities in support of plan (i.e., SAP and COP) submittal and after review of the location by a Qualified Marine Archaeologist under 4.2.4, discovers an unanticipated potential archaeological resource, such as the presence of a shipwreck (e.g., a sonar image or visual confirmation of an iron, steel, or wooden hull, wooden timbers, anchors, concentrations of historic objects, piles of ballast rock) or evidence of a pre-contact archaeological site (e.g. stone tools, pottery or other pre-contact artifacts) within the project area, the Lessee must:
- 4.2.7.1 Immediately halt seafloor/bottom-disturbing activities within the area of discovery;
  - 4.2.7.2 Notify the Lessor within 24 hours of discovery;
  - 4.2.7.3 Notify the Lessor in writing via report to the Lessor within 72 hours of its discovery;
  - 4.2.7.4 Keep the location of the discovery confidential and take no action that may adversely affect the archaeological resource until the Lessor has made an evaluation and instructs the applicant on how to proceed; and
  - 4.2.7.5 Conduct any additional investigations as directed by the Lessor to determine if the resource is eligible for listing in the National Register of Historic Places

(30 CFR 585.802(b)). The Lessor will do this if: (1) the site has been impacted by the Lessee's project activities; or (2) impacts to the site or to the area of potential effect cannot be avoided. If investigations indicate that the resource is potentially eligible for listing in the National Register of Historic Places, the Lessor will tell the Lessee how to protect the resource or how to mitigate adverse effects to the site. If the Lessor incurs costs in protecting the resource, under Section 110(g) of the National Historic Preservation Act, the Lessor may charge the Lessee reasonable costs for carrying out preservation responsibilities under the OCS Lands Act (30 CFR 585.802(c-d)).

#### 4.3 **Geological and Geophysical (G&G) Survey Requirements**

- 4.3.1 **General.** The Lessee must ensure that all vessels conducting activity in support of a plan (i.e., SAP and COP) submittal comply with the geological and geophysical survey requirements specified in 4.3 except under extraordinary circumstances when complying with these requirements would put the safety of the vessel or crew at risk.
- 4.3.2 **Visibility.** The Lessee must not conduct G&G surveys in support of plan (i.e., SAP and COP) submittal at night or if any observation conditions (e.g., darkness, rain, fog, and sea state) prevent visual monitoring of the HRG survey exclusion zone (see 4.3.6.1) or the geotechnical exploration exclusion zone (see 4.3.7.1), except as allowed under 4.3.3.
- 4.3.3 **Nighttime Survey Requirements.** If the Lessee intends to conduct G&G survey operations in support of plan submittal at night or when visual observation is otherwise impaired, the Lessee must use PSOs supplemented with night vision technology and a passive acoustic monitoring system to monitor the exclusion zone. The Lessee must submit to the Lessor an alternative monitoring plan detailing the monitoring methodology (e.g., active or passive acoustic monitoring technologies). No nighttime surveys may begin until the Lessor determines that the alternative monitoring plan is adequate to monitor for protected species.
- 4.3.4 **Protected-Species Observer.** The Lessee must ensure that the exclusion zone for all G&G surveys performed in support of plan (i.e., SAP and COP) submittal is monitored by NMFS-approved protected-species observers.
- 4.3.4.1 The Lessor must ensure all PSOs and Passive Acoustic Monitoring (PAM) Operators have completed a PSO and/or PAM training program, as appropriate. PSOs must be approved by NMFS prior to the start of a survey. Instructions and application requirements to become a NMFS-approved PSO can be found at: <https://www.greateratlantic.fisheries.noaa.gov/protected/esaobserver/index.html>.
- 4.3.4.2 No later than 7 calendar days prior to the scheduled start of survey activities that require PSOs, the Lessee must provide to the Lessor a list of PSOs that will implement best management practices (BMPs) during survey work. The Lessee must provide the Lessor a current approval from NMFS that indicates the PSOs

are currently qualified to work on survey, and documentation or certificate of individual PSOs' successful completion of a commercial PSO training course and/or PAM operator course with an overall examination score of 80% or greater (Baker et. al 2013 available at <https://www.fisheries.noaa.gov/resource/document/national-standards-protected-species-observer-and-data-management-program>).

- 4.3.4.3 The Lessee must submit a PSO/PAM Operator schedule showing the number of PSOs/PAM Operators used is sufficient to effectively monitor the affected area identified for each project (e.g., surveys or pile driving) according to the following: a) PSOs/PAM must not be on watch for more than 4 consecutive hours, with at least a 2-hour break after a 4-hour watch, unless otherwise accepted by the Lessor; b) PSOs/PAM must not work for more than 12 hours in any 24-hour period (Baker et al. 2013).
- 4.3.4.4 The Lessee must ensure PSO data is collected in accordance with standard reporting forms, software tools, and electronic data forms approved by BOEM for the particular activity.
- 4.3.5 Observation Location and Optical Device Availability. The Lessee must ensure that monitoring occurs from the highest available vantage point on the associated operational platform, allowing for 360-degree scanning. The Lessee must ensure that reticle binoculars and other suitable equipment are available to each observer to adequately perceive and monitor protected marine species within the exclusion zone during surveys conducted in support of plan (i.e., SAP and COP) submittal.
- 4.3.6 High-Resolution Geophysical Surveys. Stipulations specific to HRG surveys conducted in support of plan (i.e., SAP and COP) submittal where one or more acoustic sound sources is operating at frequencies below 200 kHz are provided in 4.3.6.1 through 4.3.6.9.
- 4.3.6.1 Establishment of Default Exclusion Zone. The Lessee must ensure a 200-meter radius exclusion zone around the sound source for ESA-listed whales and sea turtles. In the case of the North Atlantic right whale, the Lessee must observe a minimum separation distance of 500 m (1,640 ft), as required under 4.1.1.6.1. Exclusion zones for non-listed marine mammals will be determined through project-specific mitigation and monitoring requirements of Incidental Take Authorizations (ITAs) provided by the National Marine Fisheries Service. If an ITA is not required, default exclusion zones of 100 m (328 ft) for harbor porpoises and humpback whales, and 50 m (164 ft) for all other non-listed marine mammals must be established around each vessel conducting HRG survey activities.
- 4.3.6.2 High Resolution Geophysical Sound Source Verification. No later than 45 calendar days prior to the commencement of survey activities, the Lessee must submit the results of sound source verification for any active acoustic devices that may be used. The Lessee must submit sound source verification results containing the frequencies, source

level (dB re 1 $\mu$ Pa), and modeled distances to most current guidance specified by the Lessor for ear injury and behavioral disturbance in the survey area. If existing data is available, the analysis must provide an explanation why the existing data is expected to be representative for the equipment in the area to be surveyed. This explanation must include a discussion of any differences between the equipment tested and the equipment to be used, a discussion of any differences in propagation characteristics conditions (depth, water temperature and bottom conditions), and an explanation for how those differences would affect sound propagation and injury and behavioral disturbance distances. No surveys may begin until the Lessor determines that the sound source verification use of existing information is acceptable.

- 4.3.6.3 If the existing SSV information is not acceptable, the Lessee must submit to the Lessor a sound source verification plan for field measurements of any HRG equipment that will be used, no later than 30 calendar days prior to the commencement of survey activities. Acoustic measurements must be sufficient to establish the following: frequencies, source level (Peak, SEL, and RMS sound pressure levels re 1  $\mu$ Pa at 1 m), and the sound exposure distance for ear injury and behavioral harassment thresholds for marine mammal hearing groups, sea turtles, and fish specified by the Lessor. The Lessee must take these sound measurements from at least three reference distances at two depths (i.e., a depth at mid-water and a depth at approximately 1 m above the seafloor). The results of the field measurements must be provided to the Lessor for review at least 24 hours in advance of commencing a survey.
- 4.3.6.3.1 If the Lessor determines that the exclusion zone does not encompass the sound-exposure threshold for ear injury to protected species, the Lessor will consult with NMFS and may impose additional requirements on the Lessee.
- 4.3.6.4 Modification of Exclusion Zone per Lessee Request. The Lessee may use the field verification results to request modification of the exclusion zone for the specific HRG survey equipment under consideration. Any new exclusion zone radius proposed by the Lessee must be based on the most conservative field measurements of the largest exclusion zone and diving behavior of the protected species in the survey area. The Lessee may periodically reevaluate the modified zone using the field verification procedures described in 4.3.6.3. The Lessee must obtain Lessor approval of any new exclusion zone before it is implemented.
- 4.3.6.5 Clearance of Exclusion Zone. The Lessee must ensure that active acoustic sound sources will not be activated until the PSO has reported the exclusion zone clear of all marine mammals and sea turtles for 60 minutes.
- 4.3.6.6 Electromechanical Survey Equipment Ramp-Up. The Lessee must ensure that, when technically feasible, a “ramp-up” of the electromechanical survey



equipment occurs at the start or re-start of HRG survey activities. A ramp-up would begin with the power of the smallest acoustic equipment for the HRG survey at its lowest power output. The power output would be gradually turned up and other acoustic sources added in a way such that the source level would increase in steps not exceeding 6 dB per 5-minute period.

- 4.3.6.7 Shut Down for Protected Species. The Lessee must ensure that anytime a protected species is sighted within the exclusion zone defined in 4.3.6.1, the PSO must notify the Resident Engineer or other authorized individual, and call for an immediate shutdown of the electromechanical survey equipment. HRG survey equipment may be allowed to continue operating if marine mammals voluntarily approach the vessel (e.g., to bow ride) when the sound sources are at full operating power. The vessel operator must comply immediately with such a call by the PSO. Any disagreement or discussion must occur only after shut-down. Subsequent restart of the electromechanical survey equipment may only occur following clearance of the exclusion zone (see 4.3.6.5) and implementation of ramp-up procedures (see 4.3.6.6).
- 4.3.6.8 Pauses in Electromechanical Survey Sound Source. The Lessee must ensure that, if the electromechanical sound source shuts down for reasons other than encroachment into the exclusion zone by a whale or sea turtle, including reasons such as, but not limited to, mechanical or electronic failure, resulting in the cessation of the sound source for a period greater than 20 minutes, restart of the electromechanical survey equipment commences only after clearance of the exclusion zone (see 4.3.6.5) and implementation of ramp-up procedures (see 4.3.6.6). If the pause is less than 20 minutes the equipment may be restarted as soon as practicable at its operational level as long as visual surveys were continued diligently throughout the silent period and the exclusion zone remained clear of marine mammals and sea turtles. If visual surveys were not continued diligently during the pause of 20-minutes or less, the Lessee must clear the exclusion zone, as described in 9.3.6.5, and implement ramp-up procedures, as described in 4.3.6.6, prior to restarting the electromechanical survey equipment.
- 4.3.7 Geotechnical Exploration. Stipulations specific to geotechnical exploration limited to borings and vibrocores and conducted in support of plan (i.e., SAP and COP) submittal are provided in 4.3.7.1 through 4.3.7.6.
- 4.3.7.1 Establishment of Default Exclusion Zones. A default exclusion zone distance of 500 m (1,640 ft) for North Atlantic right whales and other listed species must be monitored around each vessel conducting geotechnical survey activities where North Atlantic right whales are expected to occur. If surveys are conducted in an area where North Atlantic right whales are not expected to occur, a default exclusion zone of 200 m (656 ft) for other large whales and sea turtles must be

established around each vessel conducting HRG survey activities. Exclusion zones for non-listed marine mammals will be determined through project-specific mitigation and monitoring requirements of ITAs provided by the NMFS. If an ITA is not required, default exclusion zones of 100 m (328 ft) for harbor porpoises and humpback whales, and 50 m (164 ft) for all other non-listed marine mammals must be established around each vessel conducting HRG survey activities.

- 4.3.7.2 Geotechnical Sound Source Verification. No later than 45 calendar days prior to the commencement of any surveys with any geotechnical survey equipment producing underwater sound levels, the Lessee must submit existing information on the sound levels produced by the equipment. If adequate information on the equipment is not available, the Lessor may require the Lessee to submit a plan to the Lessor for field verification of the sound source levels and of any geotechnical survey equipment operating at frequencies below 200 kHz. The Lessor must approve this verification plan prior to the commencement of the survey. The Lessor may require the Lessee to modify the plan in a manner deemed satisfactory by the Lessor.
- 4.3.7.2.1 If the Lessor determines that the exclusion zone is not effective to minimize impacts to protected species, the Lessor may impose additional requirements on the Lessee, including, but not limited to, required expansion of this exclusion zone.
- 4.3.7.3 Clearance of Exclusion Zone. The Lessee must ensure that the geotechnical sound source is not activated until the PSO has reported the exclusion zone clear of all marine mammals and sea turtles for 60 minutes.
- 4.3.7.4 Modification of Exclusion Zone per Lessee Request. If the Lessee wishes to modify the default exclusion zone for specific geotechnical exploration equipment, the Lessee must submit a plan for verifying the sound source levels of the specific geotechnical exploration equipment to the Lessor. The plan must demonstrate how the field verification activities will comply with the requirements of 4.3.7.2. The Lessor may require that the Lessee modify the plan to address any comments the Lessor submits to the Lessee on the contents of the plan in a manner deemed satisfactory to the Lessor prior to the commencement of field verification activities. Any new exclusion zone radius proposed by the Lessee must be based on the sound exposure distance for ear injury or behavioral harassment thresholds for marine mammal hearing groups, sea turtles, and fish as defined by the Lessor. The Lessee must use this modified zone for all subsequent use of field-verified equipment. The Lessee may periodically reevaluate the modified zone using the field verification procedures described in 4.3.7.2. The Lessee must obtain Lessor approval of any new exclusion zone before it is implemented.

- 4.3.7.5 Shut Down for Whales and Sea Turtles. If any whales or sea turtles are sighted at or within the exclusion zone, an immediate shut-down of the geotechnical survey equipment is required. The vessel operator must comply immediately with such a call by the PSO. Any disagreement or discussion must occur only after shut-down. Subsequent restart of the geotechnical survey equipment may only occur following clearance of the exclusion zone (see 4.3.7.3).
- 4.3.7.6 Pauses in Geotechnical Survey Sound Source. The Lessee must ensure that, if the geotechnical sound source shuts down for reasons other than encroachment into the exclusion zone by a whale or sea turtle, including reasons such as, but not limited to, mechanical or electronic failure, resulting in the cessation of the sound source for a period greater than 20 minutes, restart of the geotechnical survey equipment commences only following clearance of the exclusion zone (see 4.3.7.3). If the pause is less than 20 minutes, the equipment may be restarted as soon as practicable as long as visual surveys were continued diligently throughout the silent period and the exclusion zone remained clear of marine mammals and sea turtles. If visual surveys were not continued diligently during the pause of 20 minutes or less, the Lessee must clear the exclusion zone, as described in 4.3.7.3, prior to restarting the geotechnical survey equipment.

#### 4.4 **Reporting Requirements**

- 4.4.1 The Lessee must ensure compliance with the following reporting requirements for site characterization activities performed in support of plan (i.e., SAP and COP) submittal and must use the contact information provided as an enclosure to this lease, or updated contact information as provided by the Lessor, to fulfill these requirements:
- 4.4.2 Field Verification of Exclusion Zone Preliminary Report. The Lessee must report the results of any required sound source verification of the exclusion zone for G&G survey equipment operating below 200 kHz to the Lessor and NMFS prior to using the equipment during survey activities conducted in support of plan submittal. The Lessee must include in its report a preliminary interpretation of the results for all sound sources, which will include details of the operating frequencies, sound pressure levels (SPLs) (measured in Peak, SEL, and RMS), the distance to the ear injury and behavior thresholds, frequency bands measured, as well as associated latitude/longitude positions, ranges, depths and bearings between sound sources and receivers.
- 4.4.3 Reports of Survey Activities and Observations. The Lessee must provide the Lessor with reports every 90 calendar days following the completion of HRG or geotechnical exploration activities, and a final report at the conclusion of the HRG or geotechnical exploration activities. Each report must include a summary of survey activities, all PSO and incident reports (See Appendices A and B), and an estimate of the number of listed marine mammals, sea turtles, and sturgeon observed and/or taken during these survey activities. The final report must contain a detailed

analysis and interpretation of the sound source verification data, if such data was collected by the Lessee.

- 4.4.4 Reporting Injured or Dead Protected Species. The Lessee must ensure that sightings of any injured or dead protected species (e.g., marine mammals, sea turtles, giant manta ray or sturgeon) are reported to the Lessor, NMFS, and the NMFS Greater Atlantic (Northeast) Region's Stranding Hotline (866-755-6622 or current) within 24 hours of sighting, regardless of whether the injury or death is caused by a vessel. In addition, if the injury or death was caused by a collision with a project-related vessel, the Lessee must ensure that the Lessor is notified of the incident within 24 hours. The Lessee must use the form provided in Appendix A to ADDENDUM "C" to report the sighting or incident. If the Lessee's activity is responsible for the injury or death, the Lessee must ensure that the vessel assist in any salvage effort as requested by NMFS.
- 4.4.5 Reporting Observed Impacts to Protected Species.
- 4.4.5.1 The Lessee must report any observed takes of listed marine mammals, sea turtles sturgeon, or giant manta ray resulting in injury or mortality within 24 hours to the Lessor and NMFS.
- 4.4.5.2 The Lessee must record any observed injuries or mortalities using the form provided in Appendix A to ADDENDUM "C".
- 4.4.6 Protected Species Observer Reports. The Lessee must ensure that the PSOs record all observations of protected species using standard marine mammal observer data collection protocols. The list of required data elements for these reports is provided in Appendix B to ADDENDUM "C".
- 4.4.7 Marine Mammal Protection Act Authorization(s). If the Lessee is required to obtain an authorization pursuant to section 101(a)(5) of the Marine Mammal Protection Act prior to conducting survey activities in support of plan submittal, the Lessee must provide to the Lessor a copy of the authorization prior to commencing these activities.

## 5 SITING CONDITIONS

- 5.1 **Vessel Transit Corridors.** In its COP project design, Lessee must extend any BOEM-approved vessel transit corridors in adjacent lease areas, unless BOEM determines that such corridors are not necessary or can be modified. Lessee may not construct any surface structures in such vessel transit corridors.
- 5.2 **Surface Structure Setback.** In its COP project design, the Lessee must incorporate a 750 m setback from any shared lease boundary within which the Lessee may not construct any surface structures, unless the Lessee and the adjacent lessee agree to a smaller setback, the Lessee submits such agreement to BOEM, and BOEM approves it.

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**APPENDIX A TO ADDENDUM "C"**

Lease Number OCS-A 0522

**Incident Report: Protected Species Injury or Mortality**

*Photographs/Video should be taken of all injured or dead animals.*

Observer's full name: \_\_\_\_\_

Reporter's full name: \_\_\_\_\_

Species Identification: \_\_\_\_\_

Name and type of platform: \_\_\_\_\_

Date animal observed: \_\_\_\_\_ Time animal observed: \_\_\_\_\_

Date animal collected: \_\_\_\_\_ Time animal collected: \_\_\_\_\_

Environmental conditions at time of observation (i.e. tidal stage, Beaufort Sea State, weather):

\_\_\_\_\_  
\_\_\_\_\_

Water temperature (°C) and depth (m/ft) at site: \_\_\_\_\_

Describe location of animal and events 24 hours leading up to, including and after, the incident (incl. vessel speeds, vessel activity and status of all sound source use):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Photograph/Video taken: YES / NO    If Yes, was the data provided to NMFS? YES / NO  
(Please label *species*, *date*, *geographic site* and *vessel name* when transmitting photo and/or video)

Date and Time reported to NMFS Stranding Hotline: \_\_\_\_\_

**Sturgeon Information:** (please designate cm/m or inches and kg or lbs)

Species: \_\_\_\_\_

Fork length (or total length): \_\_\_\_\_ Weight: \_\_\_\_\_

Condition of specimen/description of animal: \_\_\_\_\_

Fish Decomposed: NO SLIGHTLY MODERATELY SEVERELY

Fish tagged: YES / NO If Yes, please record all tag numbers.

Tag #(s): \_\_\_\_\_

Genetic samples collected: YES / NO

Genetics samples transmitted to: \_\_\_\_\_ on \_\_\_\_/\_\_\_\_/20\_\_

**Sea Turtle Species Information:** (please designate cm/m or inches)

Species: \_\_\_\_\_ Weight (kg or lbs): \_\_\_\_\_

Sex: Male Female Unknown

How was sex determined?: \_\_\_\_\_

Straight carapace length: \_\_\_\_\_ Straight carapace width: \_\_\_\_\_

Curved carapace length: \_\_\_\_\_ Curved carapace width: \_\_\_\_\_

Plastron length: \_\_\_\_\_ Plastron width: \_\_\_\_\_

Tail length: \_\_\_\_\_ Head width: \_\_\_\_\_

Condition of specimen/description of animal: \_\_\_\_\_

**Existing Flipper Tag Information**

Left: \_\_\_\_\_ Right: \_\_\_\_\_

PIT Tag#: \_\_\_\_\_

**Miscellaneous:**

Genetic biopsy collected: YES NO

Photographs taken: YES NO

**Turtle Release Information:**

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

State: \_\_\_\_\_ County: \_\_\_\_\_

**Remarks:** (note if turtle was involved with tar or oil, gear or debris entanglement, wounds, or mutilations, propeller damage, papillomas, old tag locations, etc.) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Marine Mammal information:** (please designate cm/m or ft/inches)

Length of marine mammal (note direct or estimated): \_\_\_\_\_

Weight (if possible, kg or lbs): \_\_\_\_\_

Sex of marine mammal (if possible): \_\_\_\_\_

How was sex determined?: \_\_\_\_\_

Confidence of Species Identification:                      SURE                      UNSURE                      BEST GUESS

Description of Identification characteristics of marine mammal: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Genetic samples collected:                      YES / NO

Genetic samples transmitted to: \_\_\_\_\_ on \_\_\_\_/\_\_\_\_/20\_\_

Fate of marine mammal: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Description of Injuries Observed: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Other Remarks/Drawings: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**APPENDIX B TO ADDENDUM "C"**

Lease Number OCS-A 0522

**REQUIRED DATA ELEMENTS FOR PROTECTED SPECIES OBSERVER REPORTS**

The Lessee must ensure that the PSO record all observations of protected species using standard marine mammal observer data collection protocols. The list of required data elements for these reports is provided below:

1. Vessel name;
2. PSOs' names and affiliations;
3. Date;
4. Time and latitude/longitude when daily visual survey began;
5. Time and latitude/longitude when daily visual survey ended; and
6. Average environmental conditions during visual surveys including:
  - a. Wind speed and direction;
  - b. Sea state (glassy, slight, choppy, rough, or Beaufort scale);
  - c. Swell (low, medium, high, or swell height in meters); and
  - d. Overall visibility (poor, moderate, good).
7. Species (or identification to lowest possible taxonomic level);
8. Certainty of identification (sure, most likely, best guess);
9. Total number of animals;
10. Number of juveniles;
11. Description (as many distinguishing features as possible of each individual seen, including length, shape, color and pattern, scars or marks, shape and size of dorsal fin, shape of head, and blow characteristics);
12. Direction of animal's travel relative to the vessel (preferably accompanied by a drawing);
13. Behavior (as explicit and detailed as possible, noting any observed changes in behavior);
14. Activity of vessel when sighting occurred.



U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "D"**

PROJECT EASEMENT

Lease Number OCS-A 0522

This section includes a description of the Project Easement(s), if any, associated with this lease, and the financial terms associated with it. This section will be updated as necessary.

I. Rent

The Lessee must begin submitting rent payments for any project easement associated with this lease commencing on the date that BOEM approves the Construction and Operations Plan (COP) or modification of the COP describing the project easement. Annual rent for a project easement 200 feet wide, centered on the transmission cable, is \$70.00 per statute mile. For any additional acreage required, the Lessee must also pay the greater of \$5.00 per acre per year or \$450.00 per year.

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "E"**

RENT SCHEDULE

Lease Number OCS-A 0522

This section includes a description of the schedule for rent payments that will be determined after the Construction and Operations Plan has been approved or approved with modifications. This section will be updated as necessary.

Unless otherwise authorized by the Lessor in accordance with the applicable regulations in 30 CFR Part 585, the Lessee must make rent payments as described below.

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

Lease Number OCS-A 0522

**CONTACT INFORMATION FOR REPORTING REQUIREMENTS**

The following contact information must be used for the reporting and coordination requirements specified in ADDENDUM "C", Stipulation 3:

**United States Fleet Forces (USFF) N46**  
**1562 Mitscher Ave, Suite 250**  
**Norfolk, VA 23551**  
**(757) 836-6206**

The following contact information must be used for the reporting requirements in ADDENDUM C, Stipulation 4.4:

**Reporting Injured or Dead Protected Species**

National Oceanic and Atmospheric Administration  
Fisheries Northeast Region's Stranding Hotline  
800-900-3622

**All other reporting requirements in Stipulation 4.4**

Bureau of Ocean Energy Management  
Environment Branch for Renewable Energy  
Phone: 703-787-1340  
Email: [renewable\\_reporting@boem.gov](mailto:renewable_reporting@boem.gov)

National Marine Fisheries Service  
Northeast Regional Office, Protected Resources Division  
Section 7 Coordinator  
Phone: 978-281-9328  
Email: [incidental.take@noaa.gov](mailto:incidental.take@noaa.gov)

Vessel operators may send a blank email to [ne.rw.sightings@noaa.gov](mailto:ne.rw.sightings@noaa.gov) for an automatic response listing all current dynamic management areas.

**ENCLOSURE**

**PUBLIC**



# United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT  
WASHINGTON, DC 20240-0001

MAR 5 2019

Mr. Iain Henderson  
Chief Financial Officer  
Vineyard Wind LLC  
700 Pleasant Street, Suite 510  
New Bedford, Massachusetts 02740

Dear Mr. Henderson:

The Bureau of Ocean Energy Management (BOEM) acknowledges receipt of Vineyard Wind LLC's (Company Number: 15010) Outer Continental Shelf (OCS) Renewable Energy Lessee's, Grantee's, and Operator's Bond No. K15371729 in the amount of \$100,000.00, conditioned to cover lease OCS-A 0522. The bond was executed by Westchester Fire Insurance Company, as the surety, on February 15, 2019, and Vineyard Wind LLC, as principal, on February 20, 2019.

The bond conforms to the requirements of the leasing and operating regulations for submerged lands on the OCS. It is effective as of the date filed, February 21, 2019, and has been placed in lease file OCS-A 0522 maintained in BOEM's Office of Renewable Energy Programs.

Please do not hesitate to contact me at our main office number, (703) 787-1300, if you have any questions.

Sincerely,

James F. Bennett  
Program Manager  
Office of Renewable Energy Programs

cc: Ms. Francesca Kazmierczak, Attorney-in-Fact  
Westchester Fire Insurance Company  
436 Walnut Street  
Philadelphia, Pennsylvania 19106

PUBLIC

Bond No.: K15371729 Bond Amount: \$100,000.00 Regional BOEM office: Sterling  
Bond Type:  Lease or Grant-Specific  Supplemental  Decommissioning

**OUTER CONTINENTAL SHELF (OCS) RENEWABLE ENERGY  
LESSEE'S, GRANTEE'S, AND OPERATOR'S BOND**

**RECEIVED**

The **Surety** is the Company Guaranteeing Performance.

Name of Surety: Westchester Fire Insurance Company  
Mailing Address: 436 Walnut Street  
Philadelphia, PA 19106

**FEB 21 2019**

Office of Renewable  
Energy Programs

If a Corporation, Incorporated in the State of: Pennsylvania; County or Parish of: Suffolk

Check here if Surety is certified by U.S. Treasury as an acceptable surety on Federal Bonds and listed in the current U.S. Treasury Circular No. 570.

The **Principal** is the Lessee, Grantee, or Designated Operator for Whom the Bond is Issued.

Name of Principal: Vineyard Wind LLC  
Mailing Address: 700 Pleasant Street, Suite 510, New Bedford, MA 02740

**Schedule A:** the lease or grant covered by this bond is the following: (Check one and enter Lease or Grant No.)

- Commercial Lease No. : OCS-A 0522  
 Limited Lease No: \_\_\_\_\_  
 Right-of-Way (ROW) Grant No. : \_\_\_\_\_  
 Right-of-Use and Easement (RUE) Grant No. : \_\_\_\_\_  
 Other (Specify): \_\_\_\_\_

In addition to the Obligations of the Principal during the period of liability of this bond, the Surety also accepts the following Obligations: (Check one)

- No Obligations other than the Obligations of the Principal during the period of liability of this bond.  
 All Obligations of all previous Sureties or guarantors even if the Obligations are not Obligations of the Principal during the period of liability of this bond.  
 All Obligations of all previous Sureties or guarantors even if the Obligations are not Obligations of the Principal during the period of liability of this bond with the exceptions or limitations identified in the attached rider.

**Definitions**

For the purposes of this document:

An **Obligation** includes any obligation arising from any regulations of the Department of the Interior or any Instrument issued, maintained, or approved under the OCS Lands Act (43 U.S.C. 1331 *et seq.* as amended).

An **Instrument** includes individually or collectively any lease, operating agreement, designation of operator or agent, permit, license, right-of-way, right-of-use and easement or project easement, whereunder the Principal has the right, privilege, or license to conduct operations on the OCS.

A **Person** includes an individual, a public or private corporation, a State, a political subdivision of a State, any association of individuals, corporations, States, or subdivisions of States, or an Agency of the United States.

**By signing below, the Principal verifies that the information above is correct and agrees to the following:**

The Principal, as agent on behalf of all lessees, grantees, and operators will fulfill all Obligations for the entire lease or grant to the same extent as though the Principal were the sole lessee, grantee, or operator for the lease or grant described in Schedule A.

**By signing below, the Surety verifies that the information above is correct and agrees to the following:**

1. The Surety does hereby absolutely and unconditionally bind itself to the United States of America acting through and by the Bureau of Ocean Energy Management (BOEM), or such other official designated by the Secretary of the Interior for this purpose, for the performance of all present and future Obligations.
2. The Surety agrees to meet all existing and future Obligations of the Principal on the lease or grant described in Schedule A at a cost not to exceed \$100,000.00.
3. The Surety will be responsible for all Obligations of the Principal in existence at the time this document becomes effective and all Obligations that accrue after that date and until all Obligations are met or until the Regional Director terminates the period of liability of this bond.
4. If the Regional Director terminates the period of liability of this bond, the Surety will remain responsible for Obligations that accrued during the period of liability until the Regional Director issues a written cancellation of the bond in favor of the Surety.
5. If this bond is cancelled, the Regional Director may reinstate this bond as if no cancellation had occurred if any payment of any obligations of the Principal(s) is rescinded or must be restored pursuant to any insolvency, bankruptcy, reorganization, or receivership, or should the representation of the Principal that it has paid its financial Obligations or performed the other Obligations of the lease or grant in accordance with BOEM specifications be materially false and the BOEM relied upon such representation in canceling the bond.
6. The Surety waives any right of notice of this bond taking effect and agrees that this bond will take effect upon delivery to BOEM.
7. The Surety's Obligations will remain in full force and effect, even if:
  - (a) Any person assigns all or part of any interest in an Instrument covered by this document.
  - (b) Any person modifies an Instrument or Obligation under an Instrument in any manner including modifications that result from a suspension; suspension or changes in rent or operating fee; modification of regulations or interpretations of regulations; or creation of any mortgage, pledge, or other grant of security interest in the Instrument.
  - (c) Any person, event, or condition terminates any Instrument covered by this bond, whether the termination is by operation of law or otherwise.
  - (d) The BOEM takes or fails to take any action in enforcing, as against any party to the Instrument, the payment of rent or operating fees or the performance of any other covenant, condition or agreement of the lease or grant, or giving notice of or making demand with respect to such nonperformance.
  - (e) The Surety suffers any loss by reason of any law limiting, qualifying, or discharging the Principal's Obligation.
8. The Surety agrees to be bound under this bond as to the interests in any Instrument retained by the Principal when the BOEM approves the transfer of any or all of the Instrument or interest in the Instrument.
9. In the event of any default under a lease or grant, the Surety must perform the Obligations of the Principal upon demand by the BOEM.
10. If the BOEM decides to commence suit to enforce its rights, it may commence and prosecute any claim, suit, action, or other proceeding against the Principal and Surety, or either of them, whether or not the BOEM joins the lessees, grantees or any other party.
11. In the event there is more than one Surety for the Principal's performance of the Obligations, as to any Instrument, the Surety's Obligation and liability under this bond is on a "solidary" or "joint and several" basis along with other guarantors or sureties.
12. The Surety agrees to notify the BOEM and the Principal within 5 business days of any action filed alleging the insolvency or bankruptcy of the Surety or the Principal, or alleging any violation that would result in suspension or revocation of the Surety's charter or license to do business, or if the U.S. Treasury decertifies the Surety.
13. The Surety's Obligation and liabilities under this Bond are binding upon the Surety's successors and assigns. Nothing in this document permits assignment of the Surety's Obligation without the written consent of the BOEM.
14. The Surety hereby waives any defenses to liability on this bond based on an unauthorized Principal signature.

Westchester Fire Insurance Company

Name of Surety

*Francesca Kazmierczak*  
Signature of Person Executing for Surety

Francesca Kazmierczak, Attorney-In-Fact

Name and Title Typed or Printed

436 Walnut Street, Philadelphia, PA 19106

Business Address

Vineyard Wind LLC

Name of Principal

*Iain Henderson*  
Signature of Person Executing for Principal

IAIN HENDERSON, CFO

Name and Title Typed or Printed

700 Pleasant Street, Suite 510, New Bedford, MA 02740

Business Address

NO SEAL

Signed on this 15th day of February, 2019, in  
the State of New York, in the presence of:

*Mary Padilla*  
Signature of Witness for Surety

Mary L. Padilla

Name Typed or Printed

One Liberty Plaza, 165 Broadway

Street Address

New York, New York 10006

City, State and ZIP

Signed on this 20th day of February, 2019, in  
the State of MA, in the presence of:

*Sarah D. Collins*  
Signature of Witness for Principal

Sarah D. Collins

Name Typed or Printed

177 Huntington Avenue

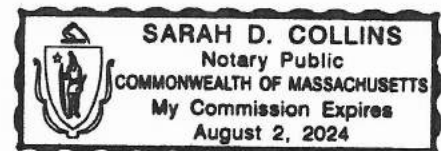
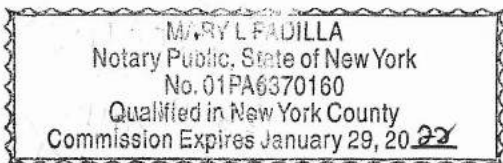
Street Address

Boston, MA 02115

City, State and ZIP

**Note:** The party signing for the Surety must attach a corporate resolution and power of attorney stating his or her authority to undertake this Obligation, pursuant to the acts of the corporate board of directors and the laws of the State of incorporation. When the Surety is a corporation, an authorized corporate officer must sign the bond and attest to it over the corporate seal.

**Paperwork Reduction Act of 1995 (PRA) Statement:** The PRA (44 U.S.C. 3501 *et seq.*) requires us to inform you that BOEM collects this information to hold the surety liable for the obligations and liability of the Principal (lessee, grantee or operator). Responses are mandatory. No proprietary information is collected. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB Control Number. Public reporting burden for this form is estimated to average 1 hour per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, Bureau of Ocean Energy Management, 45600 Woodland Road, Sterling, Virginia 20166.



# CHUBB

## Power of Attorney

Westchester Fire Insurance Company | ACE American Insurance Company

Know All by These Presents, that WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint Debra A. Deming, Sandra Diaz, Cynthia Farrell, Peter Healy, Francesca Kazmierczak, Kristine Mendez, Aklima Noorhassan, Edward Reilly, Frances Rodriguez and Nancy Schnee of New York, New York-----

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY have each executed and attested these presents and affixed their corporate seals on this 14<sup>th</sup> day of August, 2018.

*Dawn M. Chloros*

Dawn M. Chloros, Assistant Secretary

*Stephen M. Haney*

Stephen M. Haney, Vice President



STATE OF NEW JERSEY

County of Hunterdon

SS.

On this 14<sup>th</sup> day of August, 2018, before me, a Notary Public of New Jersey, personally came Dawn M. Chloros, to me known to be Assistant Secretary of WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros, being by me duly sworn, did depose and say that she is Assistant Secretary of WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and knows the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that she signed said Power of Attorney as Assistant Secretary of said Companies by like authority; and that she is acquainted with Stephen M. Haney, and knows him to be Vice President of said Companies; and that the signature of Stephen M. Haney, subscribed to said Power of Attorney is in the genuine handwriting of Stephen M. Haney, and was thereto subscribed by authority of said Companies and in deponent's presence.

Notarial Seal



KATHERINE J. ADELAAR  
NOTARY PUBLIC OF NEW JERSEY  
No. 2318985  
Commission Expires July 16, 2019

*Katherine J. Adelaar*  
Notary Public

### CERTIFICATION

Resolutions adopted by the Boards of Directors of WESTCHESTER FIRE INSURANCE COMPANY on December 11, 2006 ; ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

- (i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
- (ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this

15<sup>th</sup> day of February, 2019

*Dawn M. Chloros*

Dawn M. Chloros, Assistant Secretary



IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:  
Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com



**WESTCHESTER FIRE INSURANCE COMPANY**

**FINANCIAL STATEMENT**

**DECEMBER 31, 2017**

**ADMITTED ASSETS**

BONDS	\$1,414,055,830
SHORT - TERM INVESTMENTS	-
STOCKS	43,460
REAL ESTATE	0
CASH ON HAND AND IN BANK	(10,076,502)
PREMIUM IN COURSE OF COLLECTION*	61,431,233
INTEREST ACCRUED	14,694,454
OTHER ASSETS	175,574,508
<b>TOTAL ASSETS</b>	<b><u>\$1,655,722,983</u></b>

**LIABILITIES**

RESERVE FOR UNEARNED PREMIUMS	\$192,425,216
RESERVE FOR LOSSES	770,552,343
RESERVE FOR TAXES	13,754,897
FUNDS HELD UNDER REINSURANCE TREATIES	5,757,334
OTHER LIABILITIES	(8,973,613)
<b>TOTAL LIABILITIES</b>	<b><u>973,516,177</u></b>

CAPITAL: 70,000 SHARES, \$71.43 PAR VALUE	5,000,100
CAPITAL: PAID IN	187,192,131
AGGREGATE WRITE-INS FOR SPECIAL SURPLUS FUNDS	117,350,928
SURPLUS (UNASSIGNED)	372,663,647
<b>SURPLUS TO POLICYHOLDERS</b>	<b><u>682,206,806</u></b>
<b>TOTAL</b>	<b><u>\$1,655,722,983</u></b>

(\*EXCLUDES PREMIUM MORE THAN 90 DAYS DUE.)

**STATE OF PENNSYLVANIA**

**COUNTY OF PHILADELPHIA**

John Taylor, being duly sworn, says that he is Senior Vice President of Westchester Fire Insurance Company and that to the best of his knowledge and belief the foregoing is a true and correct statement of the said Company's financial condition as of the 31 st day of December, 2017.

Sworn before me this 14<sup>th</sup> March 2018

*John Taylor*  
Senior Vice President

*Diane Wright*  
Notary Public

August 8, 2019  
My commission expires  
COMMONWEALTH OF PENNSYLVANIA  
NOTARIAL SEAL  
Diane Wright, Notary Public  
City of Philadelphia, Philadelphia County  
My Commission Expires Aug. 8, 2019  
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

**Attachment To:**

**Section 4 - Project Description and Site Control**

**ATTACHMENT 4-5**

**REDACTED**

**Attachment To:**

**Section 4 - Project Description and Site Control**

**ATTACHMENT 4-6**

**REDACTED**

VINEYARD  OFFSHORE

**Attachment To:**

**Section 4 - Project Description and Site Control**

**ATTACHMENT 4-7**

**REDACTED**

VINEYARD  OFFSHORE

**Attachment To:**

**Section 5 - Energy Resource Assessment and Plan**

**ATTACHMENT 5-1**

**REDACTED**

VINEYARD  OFFSHORE

**Attachment To:**

**Section 5 - Energy Resource Assessment and Plan**

**ATTACHMENT 5-2**

**REDACTED**

VINEYARD  OFFSHORE

**Attachment To:**

**Section 5 - Energy Resource Assessment and Plan**

**ATTACHMENT 5-3**

**REDACTED**

VINEYARD  OFFSHORE

**Attachment To:**

**Section 5 - Energy Resource Assessment and Plan**

**ATTACHMENT 5-4**

**REDACTED**



**VINEYARD**  **OFFSHORE**

**Attachment To:**

**Section 10 - Environmental Assessment and Permit Acquisition Plan**

**ATTACHMENT 10-1**

**VINEYARD NORTHEAST SITE ASSESSMENT PLAN**

# VINEYARD NORTHEAST

## SITE ASSESSMENT PLAN

JANUARY 2022

PREPARED BY:

**Epsilon**  
ASSOCIATES INC.

SUBMITTED BY:

VINEYARD NORTHEAST LLC

VINEYARD



OFFSHORE

PUBLIC

Vineyard Northeast Site Assessment Plan (SAP)  
for Metocean Buoy(s)  
Lease OCS-A 0522

---

Prepared by:  
Epsilon Associates and Geo SubSea LLC

Prepared for:  
Vineyard Northeast LLC



January 2022

**Note:** This Site Assessment Plan was initially submitted by Vineyard Wind LLC, the original lease holder of Lease Area OCS-A 0522. In late 2021, Lease Area OCS-A 0522 was assigned to Vineyard Northeast LLC. While the Proponent name has been updated to Vineyard Northeast LLC, some graphics still retain the Vineyard Wind logo.

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## 1.0 EXECUTIVE SUMMARY

Vineyard Northeast LLC (the Proponent) seeks Site Assessment Plan (SAP) Approval from the Bureau of Ocean Energy Management (BOEM) to install, maintain, operate, and decommission up to two “non-complex” meteorological and/or oceanographic (metocean) buoys on its Lease Area OCS-A 0522 (522); the installation of the met buoy(s) is referred to as “the Project.” The purpose is to gather Lease-specific wind and ocean current data to support development of offshore renewable wind energy facilities in Lease Area OCS-A 0522. This future development of offshore wind energy generation facilities is referred to as Vineyard Wind Northeast. Installation of the met buoy(s), which will be conducted without anchoring of installation vessels to minimize seafloor impacts, is planned for the second quarter (Q2) of 2022. The proposed metocean buoy(s) will be Ocean Tech’s EOLOS FLS200 Light Detection and Ranging (LiDAR) buoy; this buoy type has already been approved by BOEM (for the US Wind SAP).

This submission presents the information required by applicable SAP-related regulations and BOEM guidance, as detailed in Section 3.0. The metocean buoy(s) will be non-complex scientific measuring devices proven to reliably operate in open ocean conditions to support offshore wind energy projects. The floating measurement buoy will be secured to the seafloor by a single chain and a single mooring weight (also referred to as an “anchor”) to minimize bottom disturbance and the risk of entanglement or entrainment of marine biota. Details of the buoy system performance standards and compliance with Lease stipulations and other requirements are provided in Section 4.0 and 9.0. Installation, operation, maintenance and decommissioning activities and reporting requirements are presented in Sections 5.0, 6.0, and 7.0 respectively.

The Proponent has conducted the required comprehensive field surveys and investigations to assess seafloor and shallow subsurface conditions within the two 300 meter (m) by 300 m (984 feet [ft] by 984 ft) study areas (named SAP-1 and SAP-2) within the Lease that have been selected to site the metocean buoy(s). These field surveys are described in Section 8.0 and related appendices. The field investigations were part of the Proponent’s 2019 geophysical, geotechnical, and environmental surveys for the Lease Area.

Evaluation of the field survey data specific to the SAP areas, including review by a Qualified Marine Archaeologist (QMA), have confirmed that conditions within both SAP study areas are suitable for deployment and operation of metocean buoy(s). Field methodology and results are presented in Sections 8.0 and 9.0, and cited appendices.

In brief, evaluation of the survey data in each SAP study area found no evidence of natural seafloor and shallow subsurface geohazards; no man-made hazards suggestive of shipwrecks, debris, abandoned fishing gear, cables, pipelines and potential ordnance; no evidence of sensitive habitats; no evidence of historic properties; and no evidence of shallow subsurface paleo features that could be indicative of former glacial meltwater streams or fluvial channels. Vibracore samples did not recover any peat layers that could be indicative of potential terrestrial soils. The QMA recommended a determination of “no historic properties” affected (36 CFR 800.4).

## 2.0 INTRODUCTION

### 2.1 *Summary of Proposed Activities*

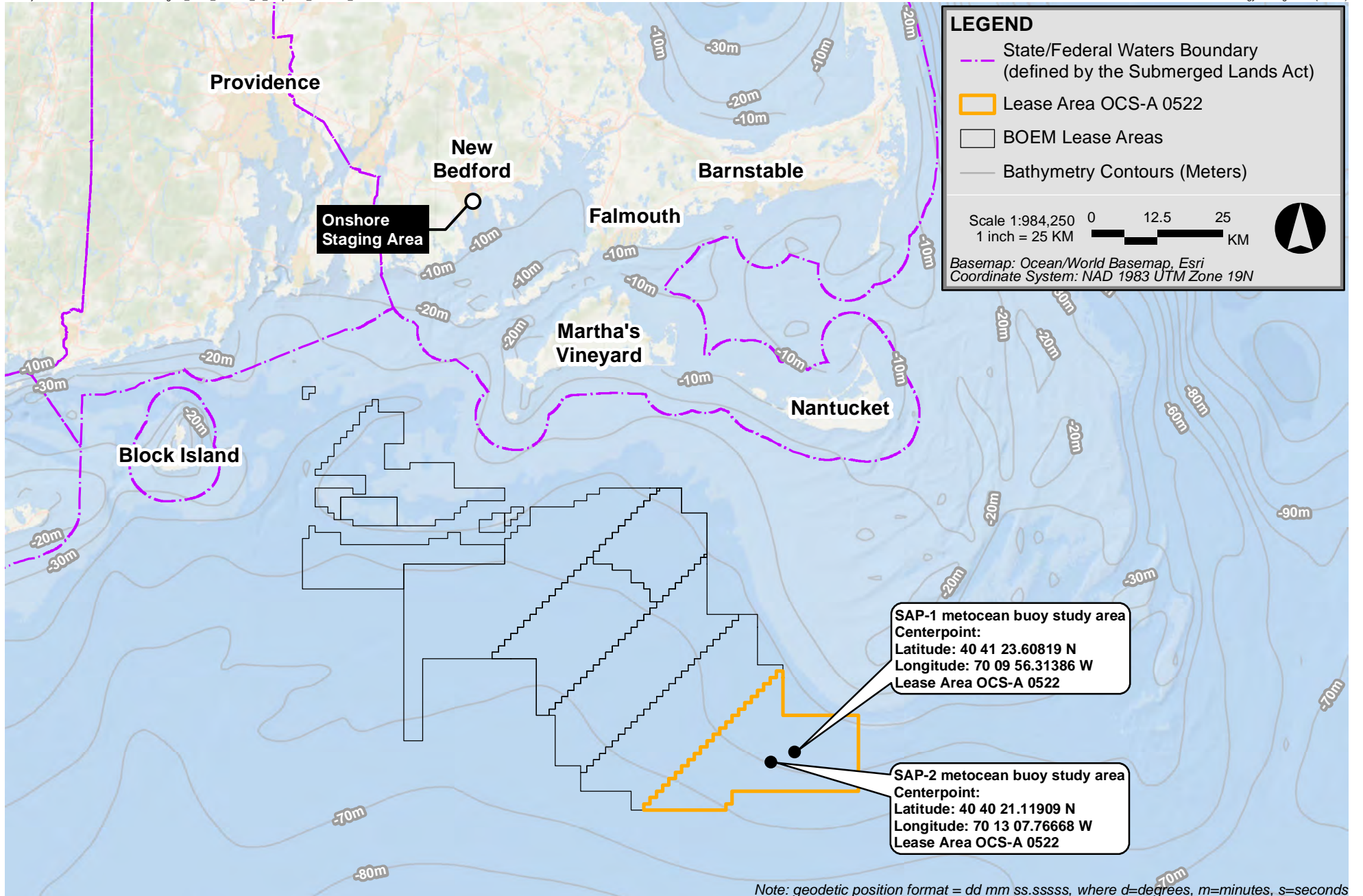
The Proponent proposes to install up to two metocean buoys in Lease Area OCS-A 0522 within the Massachusetts Wind Energy Area (MA WEA) of the Atlantic Ocean, as designated by the Bureau of Ocean Energy Management (BOEM). The Lease Area is located in federal waters of the Outer Continental Shelf (OCS) seaward of U.S. Territorial Seas, southeast of Martha's Vineyard and south of Nantucket, Massachusetts.

Data to be collected from the metocean buoy(s) will support development activities in the Lease Area. The locations of proposed metocean buoy activities (SAP-1 and SAP-2) on the Lease are shown on Figure 2.1-1. Up to two buoys will be deployed, either one in each SAP area or both in the same SAP area. In addition to initial buoy installation, the activities proposed could include recovery and/or replacement at the same location of one or more buoys if circumstances require such action (e.g. buoy damage or loss).

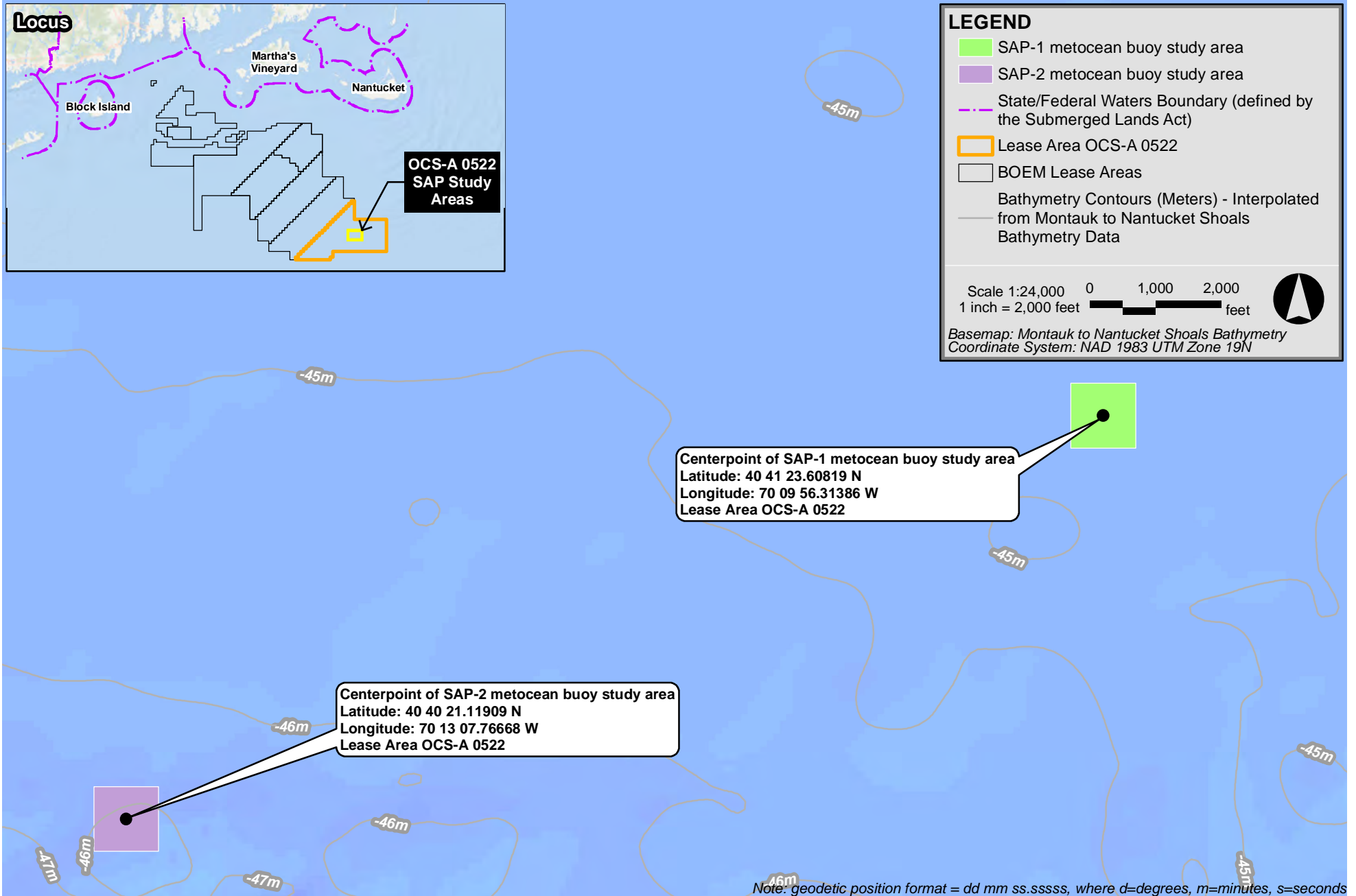
The information collected from the metocean buoy(s) will be used to further assess the wind resources and ocean conditions on the Lease, to supplement existing metocean measurement data available in the vicinity of the MA WEA. Historical and ongoing collection of meteorological and oceanographic data in the region will inform the Construction and Operations Plan (COP) submittal and engineering of the wind turbine generators (WTGs) in support of development activities on the Lease Area. The metocean buoy(s) decommissioning date has not yet been determined by the Proponent. Duration of deployment has not yet been determined, but is anticipated to be approximately 5 years, coinciding with the site assessment term of the Lease.

The devices to be deployed on Lease Area OCS-A 0522 are anticipated to be Ocean Tech's EOLOS FLS200 Light Detection and Ranging (LiDAR) buoy (see Section 4.0 for more information). These buoys minimize impacts compared to meteorological towers. The buoy system will be comprised of a "simple and non-complex" device proven to operate effectively in open ocean conditions in support of offshore wind projects; the specific buoy used has already been approved by BOEM (for the US Wind SAP). The buoy(s) will be moored to the seafloor using a single chain to avoid entanglement, in compliance with entanglement avoidance stipulations in Lease Section 4.1.4 (see Section 4.1). Further performance standards for the equipment are described in Sections 4.0 and 9.0.





Lease Area OCS-A 0522 SAP



Lease Area OCS-A 0522 SAP

## **2.2 Locations and Schedule**

Two 300 meter (m) by 300 m (984 ft by 984 ft) study areas within which the metocean buoy(s) (SAP-1 and SAP-2) will be located are shown on Figure 2.1-2, Location Plat. Pre-construction comprehensive marine field investigations have been conducted in the study areas to identify and characterize seafloor features, potentially sensitive habitats, and potential marine resources, to ensure the selected locations of the buoy(s) minimize impacts in accordance with approved survey plans and Lease requirements (see Sections 3.0, 8.0, 9.0 and related appendices).

Coordinates and water depths at the center point of each study area are presented below.

SAP-1 (northeast)	SAP-2 (southwest)
Latitude: 40 41 23.60819 N	Latitude: 40 40 21.11909 N
Longitude: 70 09 56.31386 W	Longitude: 70 13 07.76668 W
Depth: 45.0 m (147.6 ft) MLLW	Depth (m): 46.6 m (152.9 ft) MLLW

Note: geodetic position format = dd mm ss.sssss, where d=degrees, m=minutes, s=seconds

A geodatabase/shapefile for the Location Plat (Figure 2.1-2), compliant with BOEM's guidelines, is provided separately with the SAP submission.

Installation of the metocean buoys(s) is planned for Q2 of 2022. The installation process is expected to take up to two weeks, from arrival and onshore testing of the equipment and testing at the Onshore Staging Area in the Port of New Bedford (shown on Figure 2.1-1) to the time the buoy(s) are deployed at the location(s) and mooring weights are placed on the seafloor. No modifications of the Onshore Staging Area are required. The total duration of the metocean buoy(s) offshore deployment for data collection has not yet been determined, but is anticipated to be approximately 5 years, coinciding with the site assessment term of the Lease.

## **2.3 Authorized Representative and Designated Operator**

Rachel Pachter, Chief Development Officer, Vineyard Northeast LLC  
700 Pleasant St. Suite 510  
New Bedford, MA 02740  
Tel: 508-717-8964; e-mail: rpachter@vineyardwind.com

The Proponent intends to be the sole operator of the metocean buoy(s) and will comply with the applicable stipulations stated in the Lease and regulations, as described in Section 3.0, as they relate to the BOEM-approved Site Assessment Survey Plan and proposed SAP activities.

## **2.4 Certified Verification Agent (CVA)**

The type of metocean buoy selected by the Proponent is a standardized, proven, widely used and commercially available device that has previously been approved by BOEM (for the US Wind SAP) and has been successfully deployed and operated in support of offshore wind projects in similar and harsher oceanic conditions than on Lease Area OCS-A 0522 . The buoy type uses the best

available and safest technology, does not require multi-point moorings or include new or uncommon technology, and therefore will not be “complex or significant” as defined on page 8 of BOEM’s *Guidelines for Information Requirements for a Renewable Energy Site Assessment Plan (SAP)*, revised June 2019. These guidelines are referred to hereafter as BOEM’s 2019 SAP Guidelines. The mooring design has been checked and assessed by the Proponent. In addition, all installation and maintenance activities will be performed under supervision by key experts representing the Proponent.

Because the design, fabrication, installation, operation, maintenance, and decommissioning of standardized and proven metocean buoys are not considered “complex or significant” activities, in the Proponent’s opinion, the nomination of a Certified Verification Agent (CVA) is not required for this SAP activity. The Proponent hereby requests a waiver of the CVA requirement according to 30 CFR §585.610(a)(9) and 585.705(c).

### **2.5 Financial Assurance Information**

In compliance with BOEM regulations at 30 CFR §585.610(a)(15), prior to SAP approval the Proponent will provide a Surety Bond issued by a primary financial institution or other approved security, as required in 30 CFR §585.515 and 30 CFR §585.516, to guarantee the commissioning obligation.

## **3.0 CONFORMANCE WITH APPLICABLE REGULATIONS, SAP GUIDANCE AND COMMERCIAL LEASE**

### **3.1 Regulatory Framework**

This SAP has been prepared and activities will be conducted by the Proponent in conformance with the following:

- ◆ Applicable regulations at 30 CFR §Part 585, entitled *Renewable Energy and Alternate Uses of Existing Facilities on the Outer Continental Shelf*;
- ◆ BOEM’s *Guidelines for Information Requirements for a Renewable Energy Site Assessment Plan (SAP)* dated June 2019;
- ◆ Applicable terms of the Lease issued by BOEM for Lease Area OCS-A 0522;
- ◆ Guidance from BOEM at a pre-survey meeting held on March 22, 2019; and
- ◆ The Vineyard Wind OCS-A 0522 Construction and Operations Survey Plan: 522 Windfarm and Cable Routes, 2019 Campaign (submitted February 12, 2019, revised April 2, 2019 and May 1, 2019) and approved by BOEM on May 21, 2019.

In 2019, the Proponent completed field surveys across its Lease Area OCS-A 0522 (see Section 8.0 and related appendices). The surveys were conducted in accordance with a pre-survey meeting with BOEM and the Proponent’s BOEM-approved COP Survey Plan for the 2019 campaign on Lease Area OCS-A 0522, referenced above. The 2019 field investigations gathered data within two 300 m x 300 m (984 ft by 984 ft) study areas selected to site the subject metocean buoy(s), denoted as Site Assessment Plan (SAP) activities, once BOEM approval of this SAP is obtained. The field surveys specific to the SAP study areas which will contain the metocean buoy(s) are detailed in Section 8.0 and related Appendices; results of applicable resource assessments are summarized in Section 9.0 and relevant appendices.

The Proponent will conduct its proposed site assessment activities for the metocean (buoy(s) in compliance with 30 CFR §585.606(a)(2 through 4) in a manner that conforms to all applicable laws, regulations, and Lease provisions for OCS-A 0522; is safe; does not reasonably interfere with other uses of the OCS; does not cause undue harm, to the extent practicable, to natural resources, life, property, the environment, or resources of historical or archaeological significance; uses BOEM’s SAP best available and safest technology; uses best management practices (see Table 9.8-1); and uses properly trained personnel.

The Proponent will take suitable measures, including briefing all SAP offshore support staff, to prevent unauthorized discharge of pollutants including marine trash and debris into the offshore environment. Furthermore, the Proponent will comply with BOEM’s applicable federal regulations (Table 3.1-1), applicable Lease stipulations (Table 3.1-2), BOEM’s SAP Best Management Practices (Table 9.8-1) and BOEM’s 2019 SAP guidelines as referenced throughout this document. Table 3.1-1 below lists relevant BOEM regulations and where the corresponding information can be found in this SAP.

**Table 3.1-1 Lease Area OCS-A 0522 SAP Regulatory Crosswalk Table**

<b>Regulatory Requirement</b>	<b>Location in SAP for Metocean Buoy(s)</b>
<b>30 CFR §585.605(a,b,&amp;d)</b>	
585.605(a) Describe the activities you plan to perform for the characterization of your commercial lease, including your project easement, or to test technology devices.	Section 2.1 Sections 4.0 through 8.0
585.605(a)(1) The SAP must describe how you will conduct your resource assessment	Section 8.0 and cited Appendices
585.605(b) Include data from physical characterization surveys and baseline environmental surveys	Sections 8.0 and 9.0 and cited Appendices
585.605(d) If the facilities are complex or significant, you must also comply with the requirements of subpart G of this part and submit your Safety Management System as required by § 585.810.	The metocean buoys are not “complex or significant”.

**Table 3.1-1 Lease Area OCS-A 0522 SAP Regulatory Crosswalk Table (Continued)**

Regulatory Requirement	Location in SAP for Metrocean Buoy(s)
<b>30 CFR §585.606</b>	
585.606(a)(1) The project conforms to all applicable laws, regulations, and lease provisions of your commercial lease;	Section 3.1
585.606(a)(2) The project is safe;	Section 3.1
585.606(a)(3) The project does not unreasonably interfere with other uses of the OCS, including those involved with National security or defense;	Section 3.1 and Table 3.3-1
585.606(a)(4) The project does not cause undue harm or damage to natural resources; life (including human and wildlife); property; the marine, coastal, or human environment; or sites, structures, or objects of historical or archaeological significance;	Sections 3.1 and 9.0 and cited Appendices
585.606(a)(5) The project uses best available and safest technology;	Sections 2.4, 3.1
585.606(a)(6) The project uses best management practices;	Sections 3.1, Table 9.8-1
585.606(a)(7) Uses properly trained personnel.	Section 3.1
585.606(b) Your site assessment activities will collect all information needed for your COP	Section 3.1
<b>30 CFR §585.610(a)(1-16)</b>	
585.610(a)(1) Contact Information	Section 2.3
585.610(a)(2) The site assessment or technology testing concept	Section 2.1
585.610(a)(3) Designation of operator, if applicable	Section 2.3
585.610(a)(4) Commercial lease stipulations and compliance	Table 3.1-2, Section 9.8; Table 9.8-1
585.610(a)(5) A location plat	Section 2.2 Figures 2.1-1 and 2.1-2
585.610(a)(6) General structural and project design, fabrication, and installation	Section 2.1 Section 4.0 Section 5.0 Appendix A
585.610(a)(7) Deployment activities	Section 5.0
585.610(a)(8) Your proposed measures for avoiding, minimizing, reducing, eliminating, and monitoring environmental impacts	Sections 4.1, 4.2 and 4.4 Sections 5.2, 6.3, 7.2 Section 9.0 and Table 9.8-1
585.610(a)(9) CVA nomination, if required	Section 2.4; the Proponent requests a waiver of the CVA requirement

**Table 3.1-1 Lease Area OCS-A 0522 SAP Regulatory Crosswalk Table (Continued)**

<b>Regulatory Requirement</b>	<b>Location in SAP for Metocean Buoy(s)</b>
<b>30 CFR §585.610(a)(1-16)</b>	
585.610(a)(10) Reference information	Section 10.0
585.610(a)(11) Decommissioning and site clearance procedures	Section 7.0
585.610(a)(12) Air quality information (refers to 585.659: comply with EPA Clean Air Act and implementing regulations)	Section 9.7
585.610(a)(13) A listing of all Federal, State, and local authorizations or approvals required to conduct site assessment activities on your lease	Sections 3.1, 3.3 Table 3.3-1
585.610(a)(14) A list of agencies and persons with whom you have communicated, or with whom you will communicate, regarding potential impacts associated with your proposed activities	Section 3.0: 3.2, 3.3, 3.4
585.610(a)(15) Financial assurance information	Section 2.5
585.610(a)(16) Other information	None
<b>30 CFR §585.610(b)(1-5)</b>	
585.610(b)(1) Geotechnical – The results from the geotechnical survey with supporting data	Sections 8.0, 9.2 Appendix C
585.610(b)(2) Shallow hazards – The results from the shallow hazards survey with supporting data	Sections 8.0, 9.6 Appendix C
585.610(b)(3) Archaeological – The results from the archaeological survey with supporting data, if required	Sections 8.0, 9.5 Appendix D
585.610(b)(4) Geological survey – The results from the geological survey with supporting data	Sections 8.2, 9.2 Appendix C
585.610(b)(5) Biological survey – The results from the biological survey with supporting data	Sections 8.2, 9.4 Appendix E
<b>30 CFR §585.611 NEPA</b>	See Table 9.8-1 for measures to minimize impacts to categorically excluded resources per BOEM’s 2019 SAP Guidance
585.611(b)(1) Hazard information	Section 8.0 Section 9.0
585.611(b)(2) Water quality	See Section 3.2: Categorically excluded per BOEM 2019 Guidance and 30 CFR §585.611(b).

**Table 3.1-1 Lease Area OCS-A 0522 SAP Regulatory Crosswalk Table (Continued)**

Regulatory Requirement	Location in SAP for Metocean Buoy(s)
<b>30 CFR §585.611 NEPA</b>	See Table 9.8-1 for measures to minimize impacts to categorically excluded resources per BOEM’s 2019 SAP Guidance
585.611(b)(3) Biological resources	See Section 3.2: Categorically excluded per BOEM 2019 Guidance and 30 CFR §585.611(b); Addressed in Sections 8.5 and 9.4 and Appendix E under 30 CFR §585.610(b)(5)
585.611(b)(4) Threatened or endangered species	See Section 3.2: Categorically excluded per BOEM 2019 Guidance and 30 CFR §585.611(b).
585.611(b)(5) Sensitive biological resources or habitats	See Section 3.2: Categorically excluded per BOEM 2019 Guidance and 30 CFR §585.611(b). Addressed in Sections 8.5 and 9.4 and Appendix E.
585.611(b)(6) Archaeological resources	See Section 3.2: Categorically excluded per BOEM 2019 Guidance and 30 CFR §585.611(b). Addressed in Sections 8.4, 9.6 and Appendix D under 30 CFR §585.610(b)(5)
585.611(b)(7) Social and economic conditions	See Section 3.2: Categorically excluded per BOEM 2019 Guidance and 30 CFR §585.611(b).
585.611(b)(8) Coastal and marine uses	See Section 3.2: Categorically excluded per BOEM 2019 Guidance and 30 CFR §585.611(b).
585.611(b)(9) Consistency Certification	See Section 3.2: Categorically excluded per BOEM 2019 Guidance and 30 CFR §585.611(b).
585.611(b)(10) Other resources, conditions, and activities	See Section 3.2: Categorically excluded per BOEM 2019 Guidance and 30 CFR §585.611(b).

Table 3.1-2 demonstrates compliance with the commercial stipulations relevant to this SAP in BOEM’s *Commercial Lease of Submerged Land for Renewable Energy Development on the Outer Continental Shelf* for Lease Area OCS-A 0522 (effective Date April 1, 2019). Lease stipulations pertaining to minimizing impacts to marine resources are listed in Section 9.8 and Table 9.8-1. The Proponent will comply with the Lease stipulations below, in Section 9.8, and in Table 9.8-1.



**Table 3.1-2 Lease Area OCS-A 0522 Commercial Lease Stipulations and Compliance**

<b>Stipulation</b>	<b>Compliance</b>
<b>Section 4(a):</b> The Lessee must make all rent payments to the Lessor in accordance with applicable regulations in 30 CFR Part 585, unless otherwise specified in Addendum "B."	The Proponent has made and will continue to make all rent payments in accordance with applicable regulations, unless otherwise specified in Addendum "B".
<b>Section 4(b):</b> The Lessee must make all operating fee payments to the Lessor in accordance with applicable regulations in 30 CFR Part 585, as specified in Addendum "B."	The Proponent will make all operating fee payments in accordance with applicable regulations.
<b>Section 5:</b> The Lessee may conduct those activities described in Addendum "A" only in accordance with a SAP or COP approved by the Lessor. The Lessee may not deviate from an approved SAP or COP except as provided in applicable regulations in 30 CFR Part 585.	The Proponent will conduct activities as described in the SAP.
<b>Section 7:</b> The Lessee must conduct, and agrees to conduct, all activities in the leased area and project easement(s) in accordance with an approved SAP or COP, and with all applicable laws and regulations.	The Proponent will conduct all activities in the leased area in accordance with the SAP and all applicable laws and regulations.
<b>Section 10:</b> The Lessee must provide and maintain at all times a surety bond(s) or other form(s) of financial assurance approved by the Lessor in the amount specified in Addendum "B."	The portions of the Lease development activities in federal waters will be covered by financial assurance in amounts and within time frames approved by BOEM and in accordance with Addendum "B", Section IV of the Lease. See Section 2.5.
<b>Section 13:</b> Unless otherwise authorized by the Lessor, pursuant to the applicable regulations in 30 CFR Part 585, the Lessee must remove or decommission all facilities, projects, cables, pipelines, and obstructions and clear the seafloor of all obstructions created by activities on the leased area and project easement(s) within two years following lease termination, whether by expiration, cancellation, contraction, or relinquishment, in accordance with any approved SAP, COP, or approved Decommissioning Application, and applicable regulations in 30 CFR Part 585.	Preliminary decommissioning plans are described in Section 7.0. The decommissioning will be in accordance with the applicable regulations.

**Table 3.1-2 Lease Area OCS-A 0522 Commercial Lease Stipulations and Compliance (Continued)**

<b>Stipulation</b>	<b>Compliance</b>
<p><b>Section 14:</b> The Lessee must:</p> <ul style="list-style-type: none"> <li>a. maintain all places of employment for activities authorized under this lease in compliance with occupational safety and health standards and, in addition, free from recognized hazards to employees of the Lessee or of any contractor or subcontractor operating under this lease;</li> <li>b. maintain all operations within the leased area and project easement(s) in compliance with regulations in 30 CFR Part 585 and orders from the Lessor and other Federal agencies with jurisdiction, intended to protect persons, property, and the environment on the OCS; and</li> <li>c. provide any requested documents and records, which are pertinent to occupational or public health, safety, or environmental protection, and allow prompt access, at the site of any operation or activity conducted under this lease, to any inspector authorized by the Lessor or other Federal agency with jurisdiction.</li> </ul>	<ul style="list-style-type: none"> <li>(a) The Proponent will maintain all places of employment in compliance with applicable standards.</li> <li>(b) The Proponent will maintain all operations in the leased area in compliance with applicable regulations.</li> <li>(c) The Proponent will provide any requested documents and records.</li> </ul>
<p><b>Section 15:</b> The Lessee must comply with the Department of the Interior’s non-procurement debarment and suspension regulations set forth in 2 CFR Parts 180 and 1400 and must communicate the requirement to comply with these regulations to persons with whom it does business related to this lease by including this requirement in all relevant contracts and transactions.</p>	<p>The Proponent will comply with the applicable Department and suspension regulations.</p>
<p><b>Section 16:</b> During the performance of this lease, the Lessee must fully comply with paragraphs (1) through (7) of Section 202 of Executive Order 11246, as amended (reprinted in 41 CFR 60-1.4(a)), and the implementing regulations, which are for the purpose of preventing employment discrimination against persons on the basis of race, color, religion, sex, or national origin.</p>	<p>The Proponent will fully comply with paragraphs (1) through (7) of section 202 of Executive Order 11246, as amended.</p>
<p><b>Addendum “B”, Section III (Payments):</b> Unless otherwise authorized by the Lessor in accordance with the applicable regulations in 30 CFR Part 585, the Lessee must make payments as described below.</p>	<p>The Proponent will make payments as stipulated in Addendum “B”, Section III.</p>

**Table 3.1-2 Lease Area OCS-A 0522 Commercial Lease Stipulations and Compliance (Continued)**

Stipulation	Compliance
<b>Addendum “C”, Section 2 (Site Characterization):</b>	
<b>Addendum “C”, Section 3 (National Security and Military Operations):</b> The Lessee must comply with the requirements specified in stipulations 3.1, 3.2, and 3.3 when conducting site characterization activities in support of plan (i.e., SAP and/or COP) submittal.	The Proponent will comply with the requirements in stipulations 3.1, 3.2, and 3.3 of Addendum “C”.
<b>Addendum “C”, Section 4 (Standard Operating Conditions)</b>	The Proponent will comply with the applicable Standard Operating Conditions in Addendum “C”, Section 4.
<b>Section 4.1: General</b>	
<b>4.1.1: Vessel Strike Avoidance Measures</b> The Lessee must ensure all vessels conducting activities in support of the SAP comply with vessel strike avoidance measures, using specific transit speeds, visual and database monitoring, separation distances and other measures. And that vessel operators are briefed.	See Section 9.8-1: stipulation subclauses are listed in Measures to Reduce Impacts to Marine Mammals and Sea Turtles
<b>4.1.2: Marine Trash and Prevention</b> The Lessee must ensure all offshore SAP staff are briefed on marine trash and debris awareness and elimination, to ensure no trash and debris is discharged into the marine environment.	See Sections 3.1 and 9.8.1
<b>4.1.3 Fisheries Communication Plan (FCP) and Fisheries Liaison</b> The Lessee must develop a publicly available FCP to communicate with fisheries stakeholders prior to and during SAP activities and designate a point of contact.	See Section 9.8.2: Measures to Reduce Impacts to Fisheries
<b>4.1.4 Entanglement Avoidance</b> The Lessee must ensure that devices attached to the seafloor for longer than 24 hours use the best available mooring systems to minimize risk of entanglement or entrainment of marine mammals, manta rays, and sea turtles.	See Section 4.2.1: stipulation subclauses are listed in Mooring Design Standards
<b>4.2 Archaeological Survey Requirements</b> Lessee must provide the results of an archaeological survey with its plans, prepared by a Qualified Marine Archaeologist (QMA)	See Sections 8.4, 9.5 and Appendix D
<b>4.2.3 Tribal Pre-Survey Meeting</b> Lessee must hold a pre-survey meeting inviting involved tribal representatives, to inform them of planned SAP activities	See Section 3.4 Regulatory Consultations Tribal pre-survey meetings were held in April 2019.
<b>4.2.4-4.2.6 QMA Review before Disturbance</b> Lessee must only conduct geotechnical activities where analysis of geophysical survey has been completed and reviewed by a QMA to assess the presence/absence of potential historic properties prior to ground disturbance.	See Sections 8.4, 9.5 and Appendix D

**Table 3.1-2 Lease Area OCS-A 0522 Commercial Lease Stipulations and Compliance (Continued)**

<b>Stipulation</b>	<b>Compliance</b>
<p><b>4.2.7 Post-Review Discovery</b>                      Lessee must follow a specific notification process if unanticipated potential archaeological resources are discovered during SAP activities</p>	<p>See Sections 8.4, 9.5 and Appendix D</p>
<p><b>4.4 Reporting Requirements</b></p>	
<p><b>4.4.4 Reporting Injured or Dead Protected Species</b>                      The Lessee must ensure that sightings of any injured or dead protected species (see below) are reported to BOEM, NMFS and the NMFS Greater Atlantic (Northeast) Region’s Standing Hotline (866-755-6622 or current) within 24 hours of sighting. If the Lessee is responsible for the injury or death, the Lessee’s vessel must assist in any salvage effort as requested by NMFS.</p>	<p>See Section 9.8, Table 9.8-1, and reporting forms in Appendix B.</p>
<p><b>4.4.5 Reporting Observed Impacts to Protected Species</b>                      The Lessee must report any observed takes of listed marine mammals, sea turtles, sturgeon, or giant manta ray resulting in injury or mortality within 24 hours to BOEM and NMFS.</p>	<p>See Section 9.8, Table 9.8-1, and reporting forms in Appendix B.</p>

**3.2 SAP Format and Categorical Exclusions for Portions of NEPA Analysis**

The SAP is in general conformance with the recently issued BOEM SAP report template specifically for “non-complex” metocean buoys (in Attachment C of BOEM’s 2019 SAP Guidelines).

In 2014, BOEM completed a Revised Environmental Assessment (EA) for Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic Outer Continental Shelf Offshore Massachusetts (OCS EIS/EA BOEM 2014-603), which is referred to herein as the “Massachusetts EA.” In accordance with 30 CFR §585.611(b), BOEM’s 2019 SAP Guidelines (at page 21) note that the NEPA analyses conducted by BOEM as part of the Massachusetts EA included within its scope of site assessment activities for up to 10 metocean buoys (or a lesser number of the higher impact meteorological towers) on leases to be issued within the WEA:

**Metocean Buoys:** If a lessee is proposing the installation and operation of metocean buoy(s) in an area where BOEM has previously analyzed such activities under NEPA, then regulatory requirements in 585.611(b)(2 through 10) will likely not be applicable. Regulatory requirements in 585.611(b)(1) may be applicable for BOEM technical review outside of NEPA.

The Massachusetts EA resulted in a Finding of No Significant Impact for the activities under the EA’s purview.

Per 30 CFR §585.611(b), the categories and resources in 30 CFR §585.611(b)(2 through 10), which are listed below, can be excluded from duplicative analyses in areas “in which BOEM has previously considered site assessment activities under applicable Federal law (e.g., a NEPA analysis and CZMA consistency determination for site assessment activities)”...subject to a BOEM determination that “impacts are consistent with those previously considered”:

- ◆ Water quality (Note: sediment transport for the subject metocean buoy(s) is described in Sections 8.0 and 9.0);
- ◆ Biological resources; (Note: seafloor community is described and assessed in Sections 8.5 and 9.4 and Appendix E);
- ◆ Threatened or endangered species; (Note: protected species avoidance measures in Section 9.8.1 and Table 9.8-1);
- ◆ Sensitive biological resources or habitats; (Note: described and assessed herein in Sections 8.0 and 9.0, and Appendix E);
- ◆ Archaeological resources; (Note: described and assessed herein in Sections 8.0 and 9.0, and Appendix D); Social and economic conditions;
- ◆ Coastal and marine uses; and
- ◆ Consistency certification.

As shown in Table 3.2-1, the potential impacts from the proposed metocean buoy(s) are consistent with the anticipated impacts of the site assessment activities previously analyzed by BOEM as part of the Massachusetts EA.

**Table 3.2-1 Consistency of Proposed SAP Components with Massachusetts EA**

Component	Massachusetts EA	SAP	Consistency
Number of Buoys	1-2 buoys per lease.	1-2 buoys.	The number of buoys proposed are consistent with what was evaluated in the EA.
Meteorological Buoy Height	Generally, less than 12 m above sea level.	Approximately 5.3 meters above sea level.	The height is consistent with the expected height evaluated in the EA.

**Table 3.2-1 Consistency of Proposed SAP Components with Massachusetts EA (Continued)**

Component	Massachusetts EA	SAP	Consistency
Meteorological Buoy Mooring Weight (Anchor) Weight	Boat shaped and discus shaped buoy: approximately 6,000 - 10,000 lbs (2,721 – 4,536 kg).	Approximately 11,023 lbs (5,000 kg).	The weight of the anchor proposed is similar to that evaluated in the EA.
	Spar-type buoy: approximately 165 tons (149,685 kg).		
Meteorological Buoy Mooring Weight (Anchor) Footprint	Boat shaped and discus shaped buoy: approximately 6 SF (0.5 m <sup>2</sup> ).	Approximately 19.38 SF (1.8 m <sup>2</sup> ).	The proposed anchor footprint is comparable to that evaluated in the EA.
	Spar-type buoy: approximately 676 SF (62.41m <sup>2</sup> ).		
Mooring Weight (Anchor) Sweep Area	Boat shaped and discus shaped buoy: 8.5 acres.	With a 74.4-meter radius, the anchor sweep area is estimated to be approximately 4.3 acres	The anchor sweep area is within the sweep area evaluated in the EA.
	Spar-type buoy: 100 acres (based on a 357 m radius anchor sweep).		
Anchoring During Meteorological Buoy Installation	The EA assumed additional seafloor impacts from vessel anchoring during installation.	No vessel anchoring is proposed during installation.	The amount of seafloor disturbance is less than what was evaluated in the EA.
Data Collection & Transmission	Assumed a small, tethered buoy with Acoustic Doppler Current Profilers (ADCP). LiDAR, Sonic Detection and Ranging (SODAR), and Coastal Ocean Dynamic Applications Radar (CODAR) technologies could be used.	The buoy(s) will use LiDAR and ADCP.	The data collection and transmission requirements are consistent with what was assumed in the EA.

**Table 3.2-1 Consistency of Proposed SAP Components with Massachusetts EA (Continued)**

Component	Massachusetts EA	SAP	Consistency
Installation and Decommissioning	Estimated to take approximately 1-2 days to install and remove using a barge, tug, or similar vessel assuming a vessel speed of 4.5 knots during a 10-hr day.	Estimated to require one 24-hr day with one work boat for installation and decommissioning assuming a vessel speed of 9-10 knots.	The proposed timeline is comparable to what was evaluated in the EA.

Further, as required in 30 CFR §585.611(b)(1) and further specified for metocean buoys in Table 2 of BOEM’s 2019 SAP Guidance, Section 8.0 and relevant appendices describe the field surveys conducted in the two 300 m x 300 m (984 ft by 984 ft) metocean buoy deployment study areas to identify potential hazards and resources listed below. Sections 8.0 and 9.0 of this SAP describe existing conditions and assess potential impacts from the proposed metocean buoy(s) on the following:

- ◆ **Hazard information:** meteorology, oceanography, sediment transport, geology, and shallow geological or manmade hazards.

Additional resources listed below are also addressed herein, including archaeological and biological resources, as required under 30 CFR §585.610(b)(1-5) and further specified for metocean buoys in Table 2 of BOEM’s 2019 SAP Guidance. Locations of required information in this SAP report are presented in Table 3.1-1.

- ◆ **Archaeological resources**
- ◆ **Biological survey** “The level of biological information collected should be commensurate with the potential impacts from the proposed SAP activity. For example, metocean buoys may have few impact-producing factors that affect protected species or critical habitat due to their limited environmental footprint. Any activity that has several impact-producing factors, such as pile driving, may require more information regarding impacted biological resources and habits” (Table 2, BOEM’s 2019 SAP Guidance); and
- ◆ **Geotechnical surveys** “Geophysical surveys with shallow sampling methods, such as vibracores or grab samples, may be sufficient for metocean buoys.”

**3.3 Regulatory Permits and Approvals**

The Proponent will apply for the following approvals and/or authorizations shown in Table 3.3-1 to conduct site assessment activities (metocean buoy installation, operation, and decommissioning):

**Table 3.3-1 Lease Area OCS-A 0522 SAP Permitting Plan**

Permitting Agency	Applicable Permit or Approval	Statutory Basis And Implementing Regulations	Status
BOEM	Site Assessment Plan (SAP) Approval BOEM will conduct National Historic Preservation Act Review & State Historic Preservation Act Consultation	30 CFR § 585.600-618-	Filed March 2020
US Army Corps of Engineers (USACE)	Section 10/404 Permit via Nationwide Permit 5: Scientific Collection Device	Clean Water Act 33 U.S.C. 134 33 CFR § 320	Expected filing date January 2021
US Coast Guard (USCG)	Private Aid to Navigation	14 U.S.C 81; 33 CFR § 66	Expected filing date February/ March 2021

**3.4 Regulatory Consultations**

The Proponent has conducted or will conduct outreach with the following local, state, and federal agencies via meetings and/or correspondence. This outreach will address planned site assessment and development activities in the Lease Area, including the proposed metocean buoy(s). These agencies include:

- ◆ BOEM
- ◆ National Marine Fisheries Service (NMFS)
- ◆ USACE
- ◆ USCG, District Commander
- ◆ Department of Defense (DoD), US Navy – Fleet Forces

Prior to conducting SAP survey activities (as specified in the Lease), the Proponent held a pre-survey meeting on April 8 and 9, 2019 and invited members of the federally recognized Wampanoag Tribe of Gay Head/Aquinnah, the Mashpee Wampanoag Tribe, the Narragansett Indian Tribe, the Mashantucket Pequot Tribal Nation, the Mohegan Tribe of Indians of Connecticut, and the Shinnecock Indian Nation.

The Proponent and their subcontractors consulted with the Fleet Forces Atlantic Exercise Coordination Center (FFAECC), which coordinates all regional military/other agency activities (both sea and air) for the Narragansett Bay operating area (OPAREA) and ensures events are de-



conflicted. FFAECC does not need any official documentation or notification of a buoy deployment, as it is stationary. Mobile vessels conducting activities related to this SAP will notify FFAECC of their planned operations.

## **4.0 PROJECT EQUIPMENT**

The following sections describe the performance standards and constraints that the metocean buoy equipment will meet.

### **4.1 *Equipment Performance Standards***

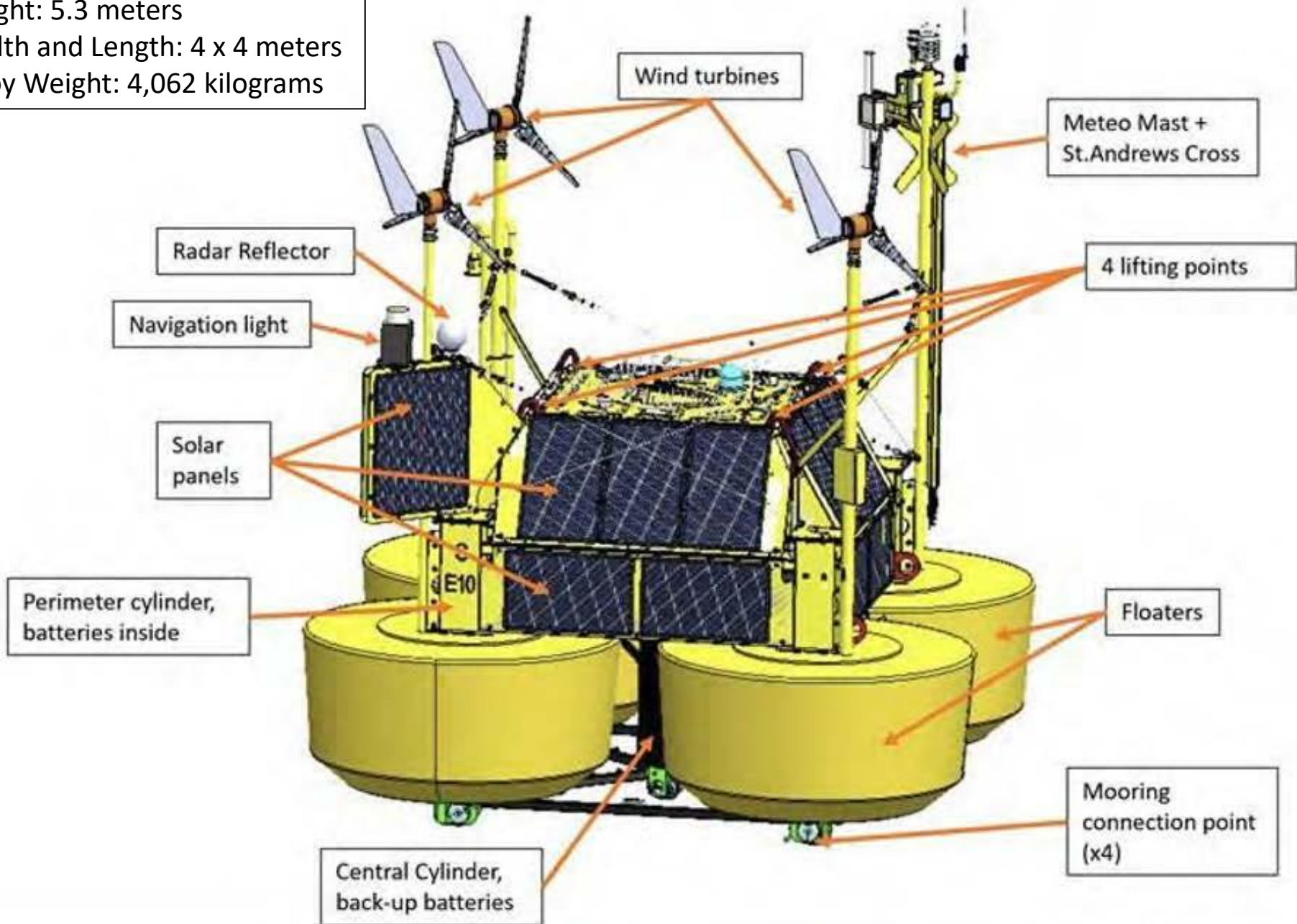
The Proponent has selected a proven multi-purpose metocean buoy, that has previously been approved by BOEM (for the US Wind SAP), tailored for the renewable energy industry and open Atlantic Ocean conditions. The buoy will accurately measure and collect wind profiles (speed and direction) at different heights within a vertical measurement cone projected above the buoy. Within the cone, wind data can be obtained at varying heights, including heights of the blade spans of the planned offshore wind turbines. The buoy is equipped with oceanographic sensors that can obtain ocean wave height and direction data, and current profiles from the sea surface to the seabed. This information will be utilized to assess site-specific wind resources and assist in developing engineering design criteria for the development activities in the Lease Area.

The mooring chain is designed to resist abrasion and corrosion to last through the five-year planned deployment period. Regular maintenance will include inspection of the mooring chain, similar to USCG's inspection routines every two years. The Proponent has selected a metocean buoy that is non-complex and meets or exceeds all performance standards set by BOEM for this type of marine measuring device.

The metocean buoy will not utilize fuel oil to avoid the risk of accidental release and emissions into the environment. The buoy will be easily deployed and relocated, either by towing or lifting on-board support vessels. The metocean buoy will conform to applicable USCG standards for special purpose buoys and will have a yellow hull.

The metocean buoy(s) that will be deployed in Lease Area OCS-A 0522 are the Ocean Tech EOLOS FLS200 LiDAR Buoy(s) (EOLOS buoy or EOLOS). A diagram of the EOLOS FLS200 buoy system is shown on Figure 4.2-1. Specifications for the mooring design are provided in Appendix A. In summary, the EOLOS is made of polyethylene, aluminum, and stainless steel, with a buoy weight of approximately 4,062 kg. The buoy has a modular hull for easy assembly and transport, an overall height of 5.3 m, is 4 m in length and width, and an overall mast height above water of 4.2 m. The buoy has 4 GB of data storage; a real-time operating system; flexible data acquisition software; full on-board processing of all measured data; and real-time data transfer. The EOLOS buoy is powered by renewable energy, specifically solar panels and wind turbines, and is equipped with back-up batteries.

Height: 5.3 meters  
Width and Length: 4 x 4 meters  
Buoy Weight: 4,062 kilograms



Lease Area OCS-A 0522 SAP

The buoy(s) will be equipped with the proper safety lighting, markings, and signal equipment per USCG Private Aids to Navigation (PATON) requirements. Tracking of the buoy(s) will be done by means of Global Positioning System (GPS) and Automatic Identification System (AIS) devices. The location of the buoy(s) will be monitored daily. In addition, there are three locator beacons that send alarms to the EOLOS data center when they are outside the designated buoy watch circle. The Proponent will maintain a list of known and pre-validated vessel providers to assist. If immediate emergency recovery is necessary, the closest suitable recovery vessel will be contacted. Additional information should an emergency recovery be needed is provided in Section 6.2.

The buoy system will be moored to the seafloor using a gravity-based single mooring weight. Typical mooring weights consist of a cement, cast iron, or steel weight linked to the floating buoy by a single chain to limit impacts to the seafloor (see Section 4.3). The proposed buoy(s) will use a cast iron mooring weight.

#### **4.2 Mooring Design Standards**

The met ocean buoy(s) utilize an appropriate mooring design that complies with applicable Lease stipulations to reduce the risk of entanglement; utilizes best management practices; is compatible with regional oceanic conditions to operate safely and securely (see Section 8.3); and limits bottom disturbance (see Section 4.3).

The Proponent is utilizing the best available mooring system to ensure the safety and security of the selected metocean buoy and to comply with BOEM's requirements under OCS-A 0522 Lease, Addendum C, Stipulation 4.1.4 entitled *Entanglement Avoidance* (containing the four subclauses below) to minimize the risk of entanglement or entrainment of marine mammals, manta rays, and sea turtles. The Proponent, as Lessee, will ensure that the subject SAP activities will comply as follows:

*Subclause 4.1.4.1:* The Lessee must ensure that any structures or devices attached to the seafloor for continuous periods greater than 24 hours use the best available mooring systems for minimizing the risk of entanglement or entrainment of marine mammals, manta rays and sea turtles, while still ensuring the safety and integrity of the structure or device. The best available mooring system may include, but is not limited to, vertical and float lines (chains, cables, or coated rope systems), swivels, shackles, and anchor designs.

*Subclause 4.1.4.2:* All mooring lines and ancillary attachment lines will use one or more of the following measures to reduce entanglement risk: shortest practicable line length, rubber sleeves, weak-links, chains, cables, or similar equipment types that prevent lines from looping or wrapping around animals or entrapping protected species.

*Subclause 4.1.4.3:* Any equipment must be attached by a line within a rubber sleeve for rigidity. The length of the line must be as short as necessary to meet its intended purpose.

*Subclause 4.1.4.4:* If an entangled live or dead marine protected species is reported, the Lessee must provide any assistance to authorized stranding response personnel as requires by BOEM or NMFS.

The selected met buoy is consistent with the lease requirements. The proposed mooring “line” is a mooring chain and is expected to be under tension, which reduces entanglement risk. The length of the mooring chain utilized depends on the water depth but is the shortest possible, while still reliably securing the buoy system. The mooring chain is designed to resist abrasion and corrosion to last through the five-year planned deployment period and will be regularly inspected for signs of abrasion and corrosion (see Section 6.2).

### **4.3 Bottom Disturbance**

The total seafloor impacts of each proposed buoy system will be caused by a combination of the mooring weight, the mooring chain sweep zone; and the limited deep-water shallow marine sediments temporarily displaced below the mooring weight.

**Mooring Weight:** For each metocean buoy, the cast iron mooring weight will occupy an expected seafloor footprint of approximately 1.2 m x 1.5 m, resulting in an area of 1.8 m<sup>2</sup> (19 SF). Upon placement on the seafloor, the mooring weight is expected to vertically penetrate the deep-water fine silty sands and silts to a depth of approximately 2.5 m (8 feet), displacing approximately 10 m<sup>3</sup> (13 cubic yards) of deep-water marine sediments.

As described in Section 9.2, the absence of any size of mobile seafloor features (ripples, megaripples, sand waves) suggests minimal bottom currents are operating in the area, and therefore scour around the weight is expected to be minimal.

**Mooring Chain Sweep Zone:** The majority of the mooring chain from the mooring weight will traverse the water column to secure the floating buoy. A varying length of the mooring chain will likely rest at times upon the seafloor and sweep around the mooring weight as the floating buoy is moved at the surface by winds, tides, and currents. The maximum length (radius) of mooring chain for each buoy that could rest on the seafloor is estimated at 74.4 m (244 feet).

It should be noted that the seafloor impact of the mooring chain may not be fully radial around the mooring weight, as the buoy will be preferentially directed by prevailing seasonal patterns. However, assuming the entire circumference is affected, the maximum estimated radial mooring chain sweep of seafloor that could be surficially and temporarily affected for each buoy as the single chain moves across it is approximately 17,381 m<sup>2</sup> (187,000 SF; 4.3 acres). The sweep zone will be within the 300 m x 300 m (22 acre) (984 ft by 984 ft) study area assessed for each buoy deployment location.

No seafloor impacts will result from buoy support vessels as activities will be conducted without anchoring. The seafloor is expected to recover naturally from these minimal impacts; no mitigation is necessary.

#### **4.4 Oil Spill Response Measures**

As described in Section 4.1, the selected metocean buoy(s) will not use fuel oil. Vessel trips to support the buoy system will be minimal and fuel spills are not expected, as vessels will be expected to comply with USCG regulations at 33 C.F.R. § 151 relating to the prevention and control of oil spills.

If a vessel spill did occur, it is likely to be small. According to the Bureau of Transportation Statistics (2018), between 2000 and 2017 the average oil spill size for vessels other than tank ships and tank barges in all U.S. waters was 368 liters (97 gallons). Because a diesel fuel or similar fuel spill of this size is expected to dissipate rapidly and evaporate within days, impacts to any affected resources would be short-term and localized to the vicinity of the spill.

The Proponent has identified three Oil Spill Response Organizations (OSROs) located in the vicinity of the Lease that are available to execute planned response measures, in the event of a release. While not under contract, in compliance with the SAP Guidance, these organizations are:

- ◆ Marine Spill Response Corporation ([www.msrg.org](http://www.msrg.org))
- ◆ US Ecology ([www.usecology.com](http://www.usecology.com))
- ◆ T&T Marine Salvage, Inc. ([www.teichmangroup.com](http://www.teichmangroup.com))

In the event of an oil spill, the Proponent's designated point of contact (POC) for the SAP activities will be Health, Safety, and Environmental Manager Geoffrey Neild (contact information 407-616-4760; [gneild@vineyardwind.com](mailto:gneild@vineyardwind.com)).

An alternative POC will be Marine Liaison Jeannot Smith (contact information 904-613-0134; [jsmith@vineyardwind.com](mailto:jsmith@vineyardwind.com)).

Within 24 hours of learning of an oil spill related to the SAP activities, the Proponent POC will contact the POCs identified at BOEM, the contracted OSRO, the captain of the subject vessel, if applicable, and any other appropriate officials or personnel. Efforts will be made to respond and minimize impacts of the spill in accordance with applicable laws. Appropriate documentation, including all relevant contact information and records of any oil spills, will be kept at the Proponent's office at 700 Pleasant Street, Suite 510, New Bedford, Massachusetts 02740.

Annually, the Proponent POC and alternate POC will conduct a notification drill to test the ability of the POCs to communicate pertinent information regarding the emergency situation and the necessary response measures to an OSRO and to BOEM.

## **5.0 DEPLOYMENT / INSTALLATION**

### **5.1 *Overview of Installation and Deployment Activities***

It is anticipated that the deployment activities will be conducted from New Bedford Harbor, Massachusetts, or a similar suitable port in the area (see Figure 2.1-1). No modifications to existing facilities at the selected port are anticipated.

Deployment and installation activities for the metocean buoy(s) that will operate on Lease Area OCS-A 0522 are expected to require one 24 hour day with one work boat making a single roundtrip. No vessel anchoring is expected. Mobilization is expected to occur at New Bedford Harbor. The buoy is expected to be lifted off the quay and onto the deck of the deployment vessel and secured with chain binders for transit. The mooring weight and mooring chain are expected to be secured onto the center deck of the vessel.

Transit time to the Lease Area OCS-A 0522 will require a distance of 75 NM and will take about 8 hours, one-way, at speeds of 9-10 knots. At the deployment location, the buoy will be lifted off the deck of the vessel into the water, and the mooring weight will be lowered to its planned location on the seafloor. Confirmatory GPS measurements of the buoy system will be obtained.

### **5.2 *Reporting Requirements***

The Proponent will report deployment and installation information about the metocean buoy(s) to BOEM as required in 30 CFR §585.615(a) and as specified in the SAP approval, when issued by BOEM. These include:

- 1) notifying BOEM in writing within 30 days of completing installation activities;
- 2) preparing and submitting an annual report to BOEM on November 1 of each operational year summarizing the site assessment activities and results; and
- 3) annual submission of a certification of compliance with certain terms and conditions of the SAP, as identified by BOEM, and other information listed in 30 CFR §585.615I such as identified measures that were not effective and recommendations for new measures.

The Proponent will also provide notifications as required (i.e. to BOEM, USCG) during deployment of the metocean buoy(s).

## **6.0 OPERATIONS AND MAINTENANCE**

### **6.1 *Data Collection and Operations for Metocean Data:***

During operation, the location of the buoy will be tracked by GPS located on the top cover of the attached buoy. In addition to this, there are three locator beacons that send alerts to the EOLOS buoy data center when they are outside of the designated buoy watch circle.

The proposed buoy will be lit by an amber flashing LED light with a 3-4 nautical mile (NM) range. The expected model to be used is the solar-powered Carmanah model, also used by the US Coast Guard (USCG), and the anticipated flash pattern is dictated by the USCG approved PATON application: typically a 5 second flash with a flash period of 20 seconds.

The buoy is expected to carry sensors to accurately measure and collect wind profiles (speed and direction) at different heights within a vertical measurement cone projected above the buoy. Within the cone, wind data can be obtained at varying heights, including heights of the blade spans of the planned offshore wind turbines. The buoy will also likely be equipped with oceanographic sensors that can obtain ocean wave height and direction data, and current profiles from the sea surface to the seabed.

The buoy is expected to have on-board data storage, a real-time operating system, and flexible data acquisition software. All measured data is typically processed on-board and accessed through a two-way communication link for data transfer. This information will be utilized to assess site-specific wind resources and assist in developing engineering design criteria for the development activities in the Lease Area.

## **6.2            *Maintenance Activities***

The Proponent will conduct safety and equipment inspections of the metocean buoy system in accordance with applicable requirements in 30 CFR Parts 585.615 and 585.824 (a,b). These will include comprehensive annual on-site inspections of all metocean buoy components and completion of a Certificate of Compliance with Conditions of SAP Approval, each submitted to BOEM. The inspections will also comply with manufacturer's guidance to test and maintain the specific buoy system.

Buoy maintenance activities typically include pre-deployment inspections and testing of components, and once deployed, routine battery changes, replacement of worn or damaged parts, and checks of mechanical, electrical, and sensor systems. The mooring chain will be inspected for abrasion and corrosion consistent with routine USCG inspections for similar mooring chains. Buoy performance will also be monitored remotely on a daily basis, based upon satellite-transmitted data, to continually assess the power systems and sensors on the buoy.

Scheduled on-site maintenance activities of the metocean buoy(s), such as battery replacements, will be conducted in accordance with the manufacturer's guidelines, using a vessel comparable to the support vessel used for installation, with sufficient lift capacity as needed. Any device that suffers from malfunction or collision will be replaced with a similar device. I

Maintenance activities could include recovery and/or replacement at the same location of a buoy with the same or similar type if circumstances require such action (e.g. buoy damage or loss).

For recovery operations, either during normal maintenance or in an emergency situation, after confirming the location and visually sighting the metocean buoy, the vessel will be positioned adjacent to the mooring for a visual inspection by the crew and safety toolbox talk, including details of the recovery procedure.

Once the crew has been briefed on the most suitable method for retrieval for the given site conditions, the captain will commence the operation by repositioning the vessel appropriately. An A-frame and winch will be attached to the recovery line of the buoy. This line will be pulled up to reach the main mooring line. The full mooring will be pulled from the water onto the deck of the vessel. The mooring weight will be lifted off the seafloor in one motion and raised high enough so that it does not drag and cause added bottom disturbance. The buoy will then be lifted out of the water onto the deck of the vessel using the A-frame and winch. Once fully retrieved, the mooring system and buoy will be secured to the vessel for safe travel back into the harbor.

Unscheduled maintenance, if required, will be conducted as soon as it is safe and practicable to access the buoy.

### **6.3 Reporting**

The Proponent will report operations and maintenance information about the metocean buoy(s) to BOEM as required in 30 CFR §585.615 and as specified in the SAP approval, when issued by BOEM. Reporting will include submission of an annual report to BOEM on November 1 of each year, summarizing activities and results. The Proponent will also submit an annual certification of compliance as directed by BOEM and as provided under 30 CFR §585.113 and 30 CFR 613e(1).

The certification will also identify any mitigation measures and monitoring methods, and their effectiveness. If measures were found not effective, recommendations for new mitigation measures or monitoring methods will also be included.

The Proponent will also continue to provide notifications to other federal agencies as required (e.g. to USCG) during operation and maintenance of the metocean buoy(s).

## **7.0 DECOMMISSIONING**

### **7.1 Decommissioning Activities**

Decommissioning is expected to be the reverse of deployment and installation activities described in Section 5.1. As stipulated, all facilities will be removed to a depth of 15 feet below the mudline, unless otherwise authorized by BOEM.

Duration of deployment has not yet been determined, but is anticipated to be approximately 5 years, coinciding with the site assessment term of the Lease. Before decommissioning occurs, the Proponent will submit a decommissioning application for approval by BOEM. The application will contain the information required by 30 CFR §585.906, including a schedule for removal, a description of the removal methods and procedures, the types of equipment, vessels and



moorings that will be used, and plans for transportation and disposal or salvage. Planned measures to protect archaeological and sensitive biological features during removal (if any) and to prevent unauthorized discharge of pollutants, trash, and debris during removal will also be included in the application.

Following approval of the application, the Proponent will submit a decommissioning notice at least 60 days prior to commencing decommission activities, in accordance with 30 CFR §585.908.

Device recovery will be undertaken by vessels similar to those used during commissioning. The recovery of the metocean buoy(s) will typically proceed by decoupling the buoy from the mooring and conducting a standard marine mooring recovery process.

The metocean buoy(s) and all related cables and moorings will be removed, in accordance with 30 CFR §585.902. All metocean buoy facilities will be removed to a depth of 15 feet (4.6 m) below the mudline, unless otherwise authorized by BOEM under 30 CFR 595.910. The seafloor will be cleared of all obstructions. The buoy will then be moved to shore and decommissioned.

If any archaeological resources are discovered during decommissioning activities, bottom-disturbing activities will be halted immediately within 1,000 feet (304.8 m) of the discovery and reported to BOEM for guidance within 72 hours, in accordance with 30 CFR §585.902e.

## **7.2 Reporting**

The Proponent will report decommissioning information about the metocean buoy(s) to BOEM as required in 30 CFR §585.912 and as specified in the SAP approval upon issuance by BOEM. Within 60 days of removal of the metocean buoy(s) and related equipment, the Proponent will submit a report to BOEM summarizing the removal activities, describing mitigation measures taken, and including a statement by an authorized representative that explosives used, if applicable, were consistent with those described in the approved decommissioning application.

The Proponent will also provide notifications to other federal agencies as required (e.g. to USCG) prior to decommissioning of the metocean buoy(s).

## **8.0 FIELD INVESTIGATIONS AND STUDIES IN THE SAP STUDY AREAS**

This section and the Appendices referenced herein describe the site-specific SAP field surveys conducted in two 300 m x 300 m (984 ft by 984 ft) deployment study areas (SAP-1 and SAP-2) that are expected to be occupied by the metocean buoy(s) on Lease OCS-A 0522, as shown on Figures 2.1-1 and 2.1-2. Each 22-acre study area constitutes the maximum Affected Environment of each metocean buoy, in that the buoy could be located anywhere within its study area. Resources and hazards identified by the surveys in the study areas are described in Section 9.0. Impacts are assessed and measures to avoid, minimize or mitigate are also described in Section 9.0. The following site-specific field surveys were conducted to assess the Affected Environment of each metocean buoy:

- ◆ Geophysical survey of each 300 m x 300 m (984 ft by 984 ft) SAP study area, to identify and assess seafloor conditions and shallow hazards;
- ◆ Shallow geotechnical survey to collect sediment samples from each study area for information on potential sediment dispersion and the presence or absence of benthic organisms;
- ◆ Archaeological resource survey utilizing the geophysical datasets, to assess the presence or absence of potentially significant shipwrecks and other archaeological resources; and
- ◆ Biological survey to identify the benthic community in sediment samples and along video transects.

In addition, oceanographic and meteorological information has been compiled from existing scientific literature and online data sources referenced herein. Once the metocean buoy(s) are deployed, site specific metocean data collection will commence.

### **8.1            *Geophysical and Shallow Geotechnical Surveys and Geologic Characteristics***

Geophysical and shallow geotechnical field investigations in the Lease Area OCS-A 0522 SAP areas took place on select days between 31 May and 31 December 2019 as part of the coordinated 2019 field campaign that addressed scopes in both Lease Area OCS-A 0522 and OCS-A 0501. Details of these investigations in the SAP areas are included in the survey summary and operations reports in Appendix C.

Two 300 x 300 m (984 ft by 984 ft) square areas were investigated in Lease Area OCS-A 0522, centered on the proposed met-ocean buoy deployment locations. A full geophysical suite of instruments was employed along a series of 11 primary lines spaced 30 m apart (W-E direction) and one perpendicular tieline through the center (N-S orientation). Systems included a multibeam echosounder, side scan sonar, gradiometer (dual magnetometers), subbottom profiler, and single channel seismic profiler. For ground truthing the acoustic data and assisting with surficial sediment and biological and benthic habitat characterization as well as shallow subsurface sediment identification, one vibracore, one to two sediment grab samples, and one underwater video transect were acquired near the center of each SAP area. Figure 8.1-1 shows the tracklines and sample locations in SAP-1 and Figure 8.1-2 illustrates the same for the SAP-2 site. Figure 8.1-3 shows the video transect and grab sample locations at SAP-1 (northeast) and SAP-2 (southwest).

Results and interpretations of the data are presented in the following paragraphs.

The Lease Area OCS-A 0522 SAP areas are located on the OCS south of Cape Cod and the islands, due south of Nantucket and southwest of Nantucket Shoals, in a region classified as primarily a depositional environment. The seabed is dominated by a combination of recent marine

sediments (Holocene age) and reworked glacial and fluvial deposits (Pleistocene). Limited bedforms suggest minimal seabed mobility in the area. Grain size tends to decrease toward the southwest into deeper water portions of Lease Area OCS-A 0522.

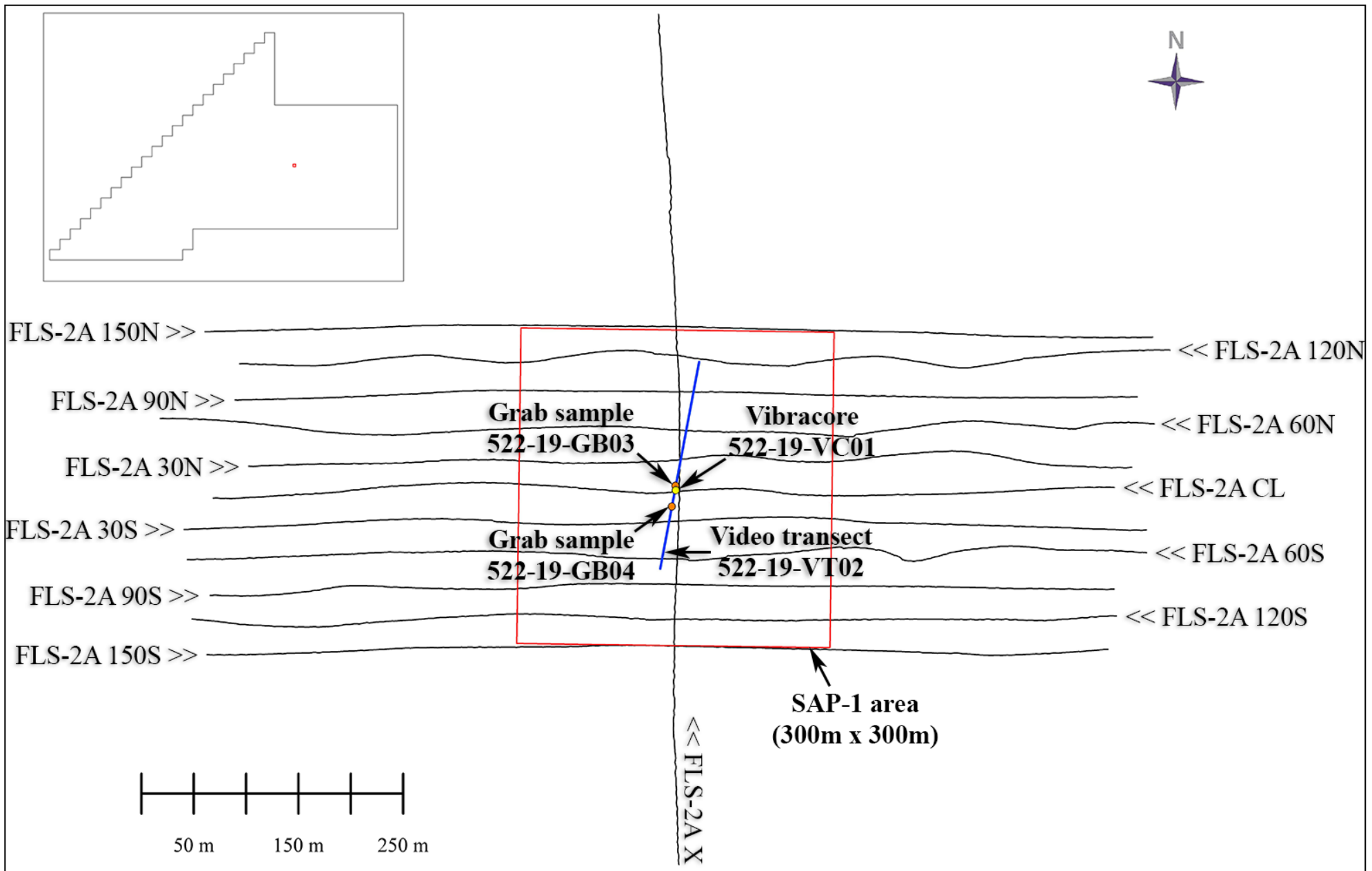
The combination of all remote sensing (geophysical and video) and sampling (benthic grab and vibracore) datasets have helped to define the local geologic characteristics of the SAP sites in the areas potentially impacted by the met-ocean buoy installation. While a 300 m by 300 m (984 ft by 984 ft) square area was surveyed, the actual footprint of the buoy mooring weight and associated chain sweep are much smaller in comparison.

**Table 8.1-1 SAP Site Geologic Characteristics**

	SAP 1	SAP 2
Water Depth (MLLW)	45.0 m	46.6 m
Surface geology	Fine sand with silt and patches of abundant shell material	Fine sand with silt
Subsurface geology	Fine sand with silt, pockets of shell material (to 2.7 m bsb; VC01)	Fine sand with silt, pockets of shell material (to 3.2 m bsb; VC02)
Unique features	Concentrated shell material in elongate, shallow depressions oriented in a WNW-ESE direction	None

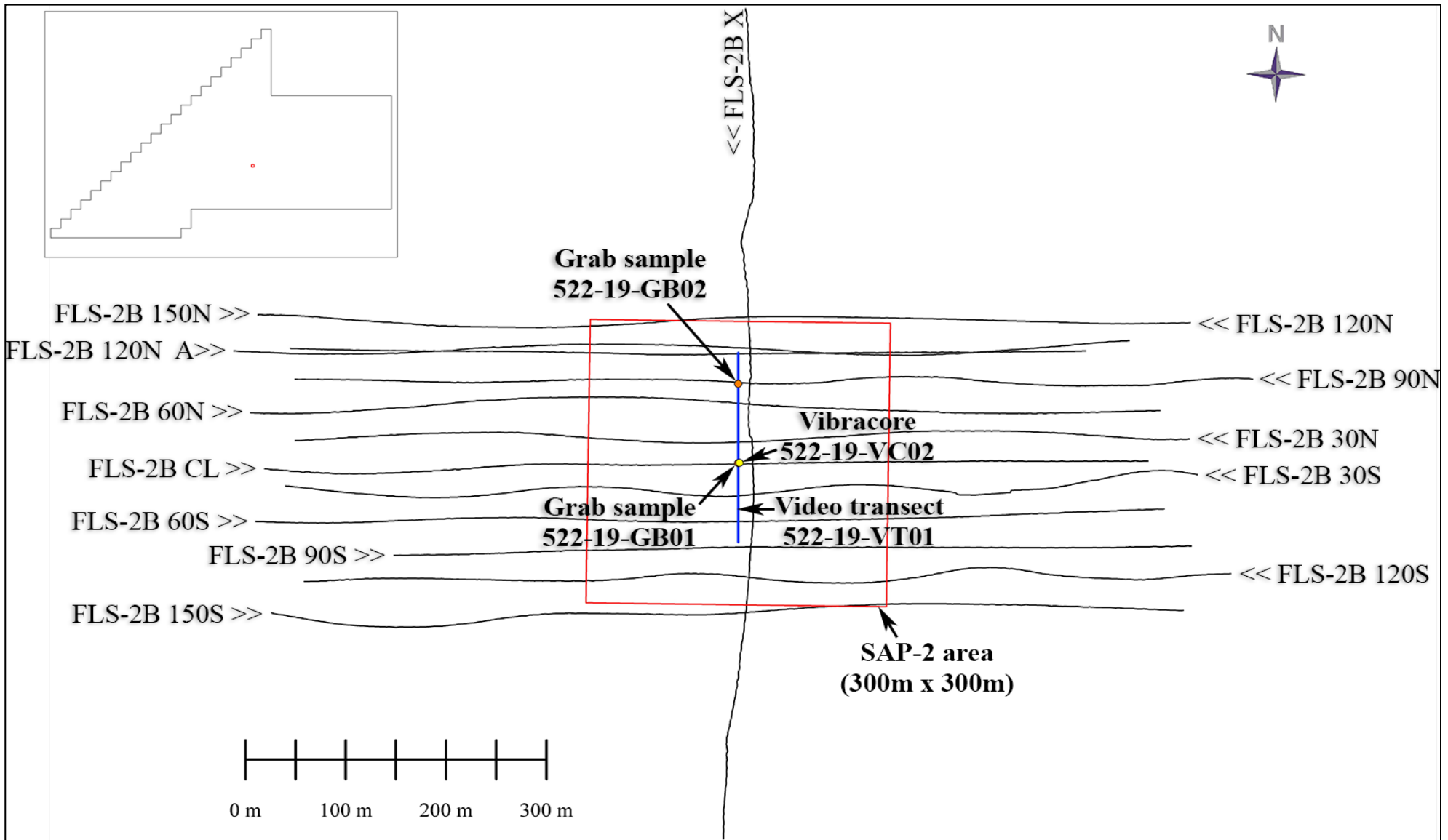
Fine grained sediments exist on the seafloor, mainly fine sand and silt (silty sand based on the Unified Soils Classification System [USCS]), with minor morphological and textural variation. A slight increase in percent silt is apparent in the grain size results for SAP-2. In SAP-1, shallow depressions (up to 50 m long, 5 m wide, and 0.15 m deep) filled with abundant shells are present (Figure 8.1-4) while in SAP-2 the seafloor exhibits small pockmarks (up to 2.5 m long, 2.5 m wide, and 0.1 m deep). These features could be the result of bottom current flow and/or benthic faunal activity. Relief associated with all localized seafloor morphology is less than 0.2 m.

Uniform conditions persist in the subsurface as the geophysical and vibracore information reveal silty sand present in the upper 3 m below the seabed (bsb). No other sediment layers were recovered in the core samples. Lab results indicate relatively competent sediment/soil that is not overly soft (loose, high water content).

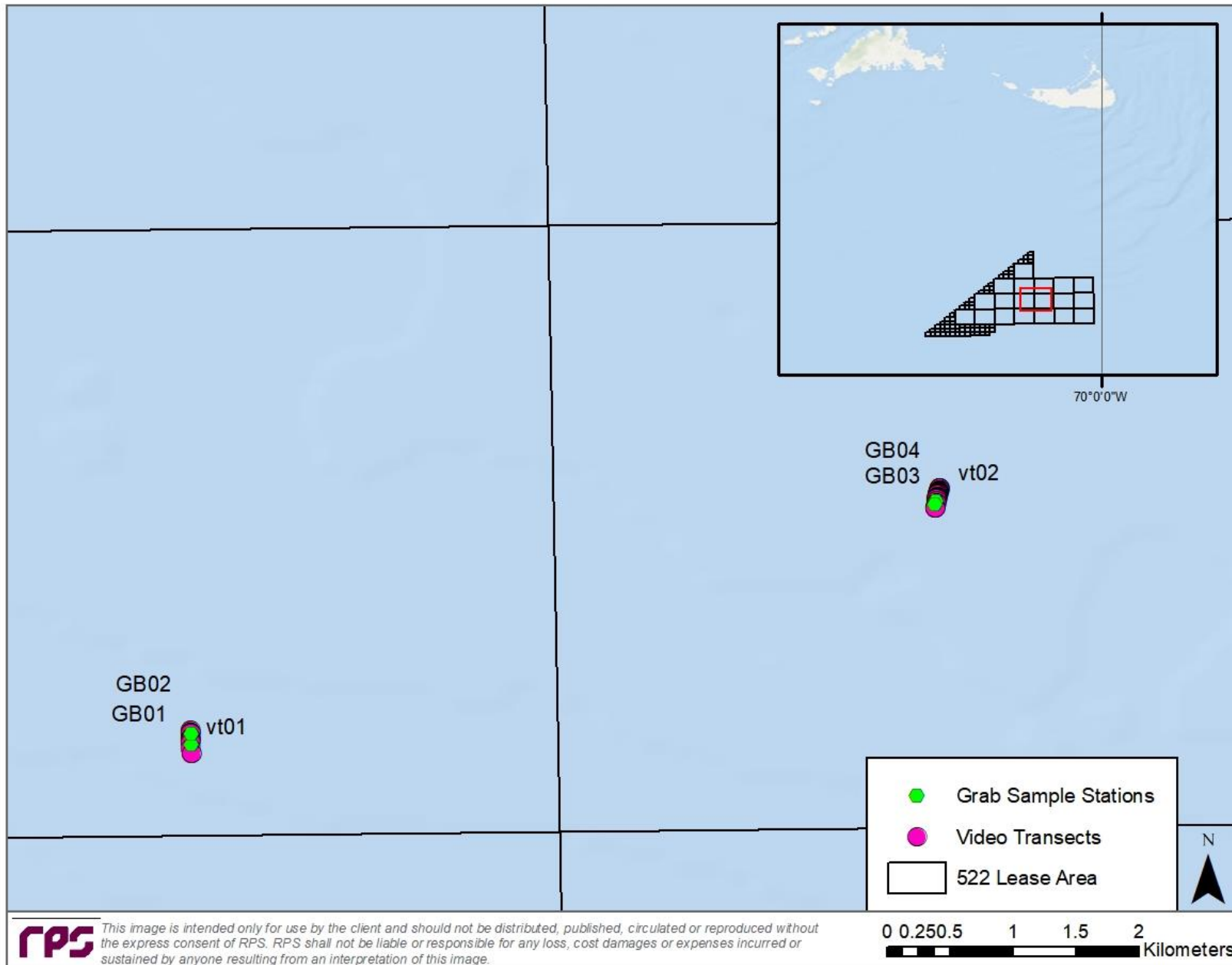


Lease Area OCS-A 0522 SAP

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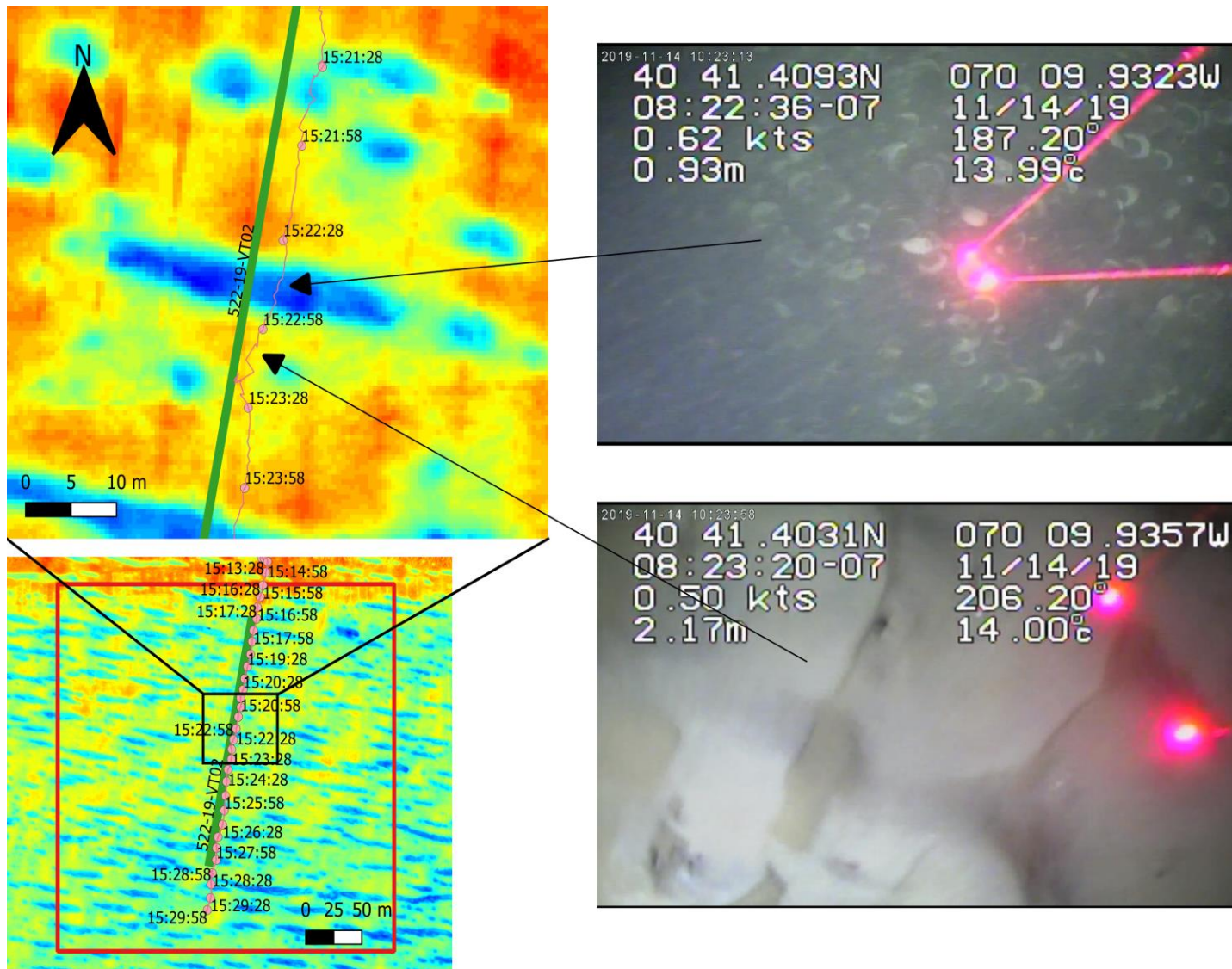


Lease Area OCS-A 0522 SAP



Map of 522 lease area SAP underwater video transects VT01 and VT02 (pink circles) and grab sample stations GB01, GB02, GB03, and GB04 (green octagons).

Lease Area OCS-A 0522 SAP



(Left) Color shaded relief of the MBES seafloor surface showing an overview (lower image) and close up/inset (top image) of the underwater video trackline with time tags through observed surficial features;

(Right) Screen captures of the recorded video showing algal mats (lower image) and the concentrated shell material (top image).

Laser point separation is 7.5 cm.

## 8.2 *Shallow Hazards*

Review of the geophysical data was performed to specifically assess the SAP sites for the presence of shallow hazards exhibiting surficial or subsurface expression on the records. The data were interpreted and then evaluated for the following hazards:

- ◆ Organics/gaseous sediments, surface seeps
- ◆ Boulders, coarse deposits
- ◆ Shallow faults
- ◆ Bedforms, slope instability
- ◆ Mobile sediments, scour
- ◆ Buried channels
- ◆ Sensitive benthic habitats
- ◆ Man-made debris, obstructions, potential ordnance
- ◆ Cultural resources (shipwrecks, paleofeatures)

The only features identified on or below the seafloor in the vicinity of the SAP areas were several side scan sonar targets and magnetic anomalies. In SAP-1 only three small sonar targets exist within the 300m by 300m area limits, S19-T224, S19-T225, and S19-T227 (Figure 8.2-1). All three targets are less than 2 m in maximum size with little to no relief and no associated magnetic signatures. None of the magnetic anomalies (all less than 9 nT amplitude) are located within the SAP-1 area limits. Target dimensions are reported in Appendix C-1, Appendix C (Geo Subsea LLC report) and Appendix D (Goodwin & Associates, Inc. report).

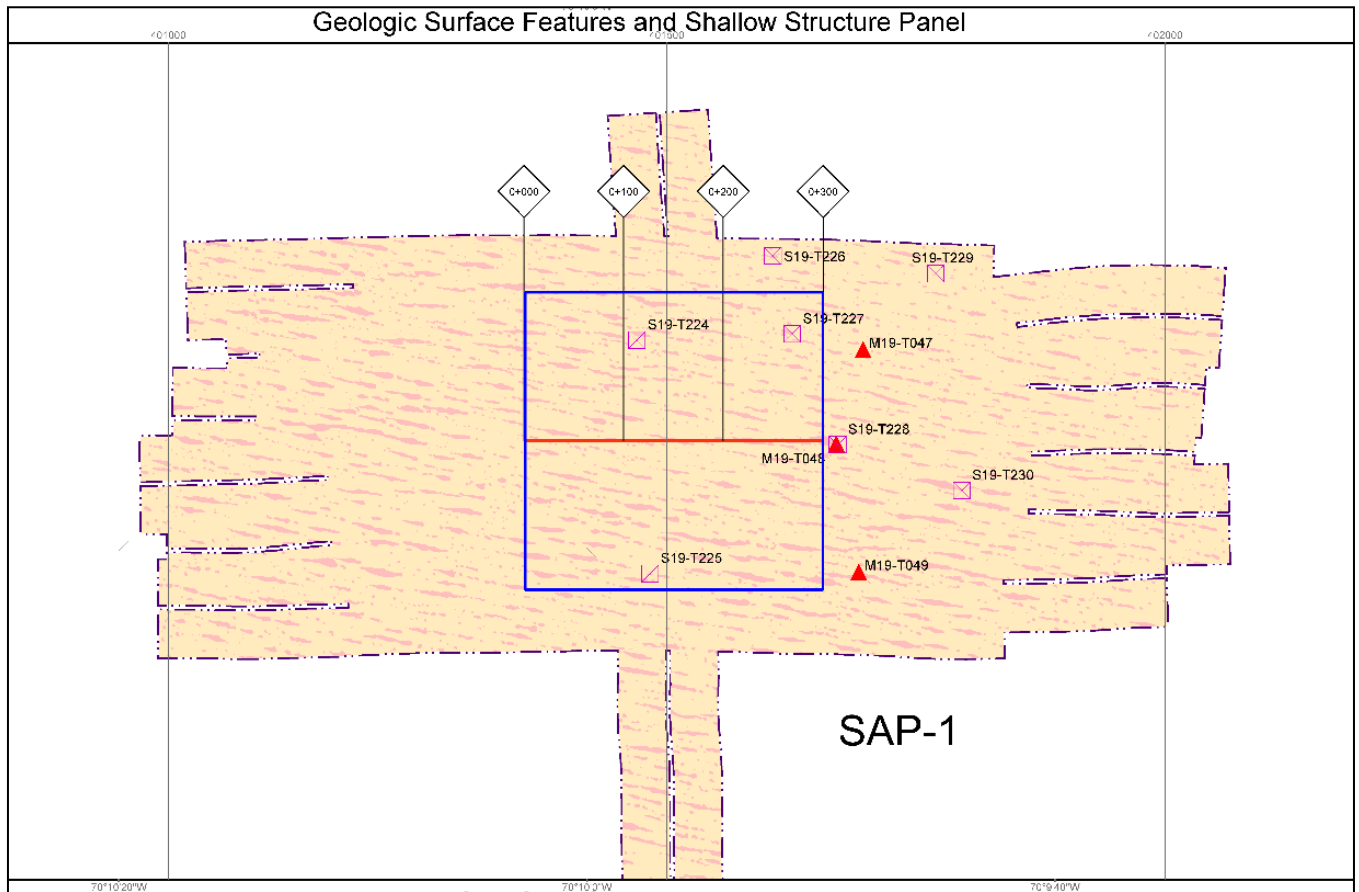
In SAP-2 only one small acoustic target exists, S19-T236, that is positioned within the 300m by 300m SAP-2 area boundaries (Figure 8.2-2). The target is less than 2.2 m in maximum size with estimated relief of 0.32 m. No magnetic anomalies were measured in or near the SAP-2 area.

While the lack of associated magnetic anomalies suggests the targets could have natural origins, no boulders are suspected in this area due to the known character of the seafloor and subsurface geology from detailed review of geophysical datasets covering the SAP areas and surrounding areas (see Appendix C-1, Section 4.4 and Appendix C).

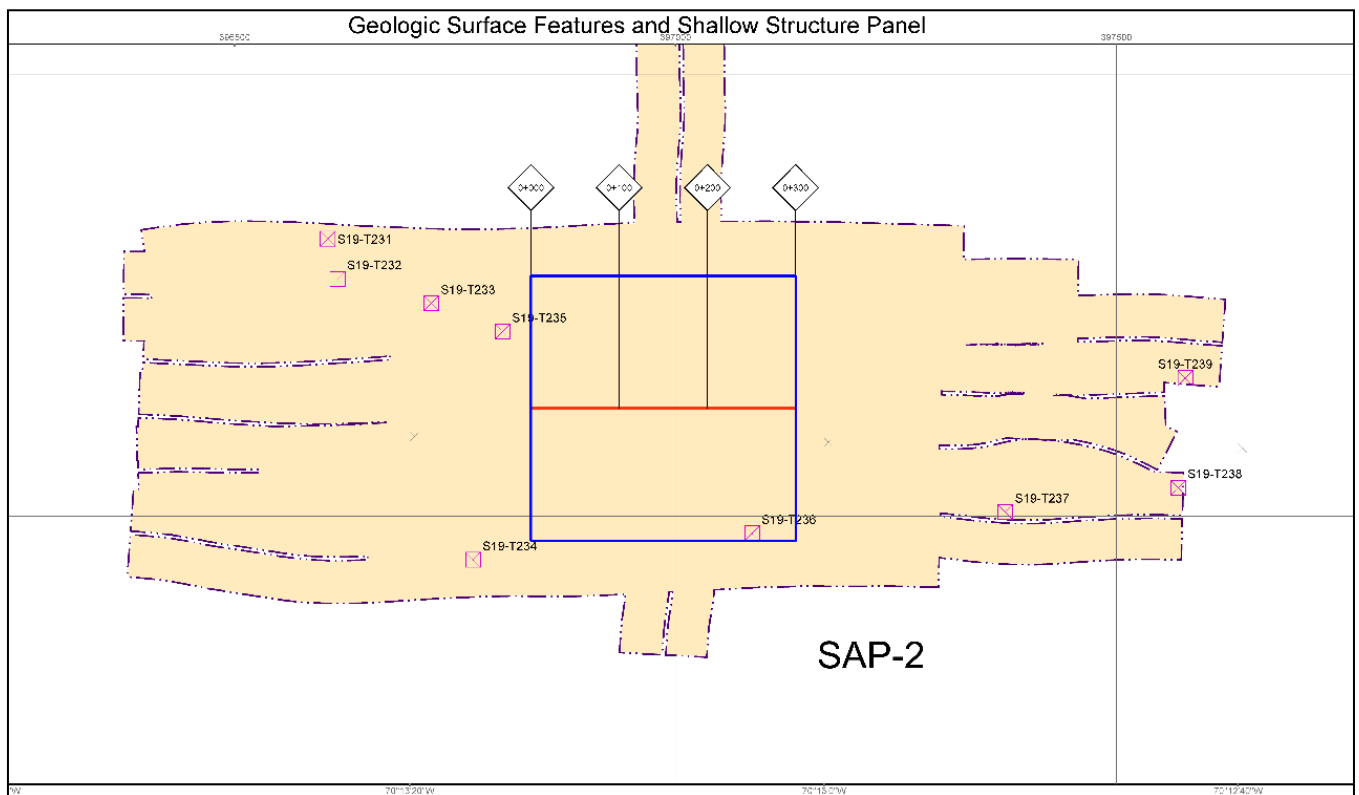
The target size and distance from the center of the SAP areas where the buoy weight(s) would be placed thus indicates there are no hazards in the deployment areas. The absence of bedforms of any significant relief indicate relatively low bottom currents and thus limited sediment mobility within the SAP areas. For more information refer to the survey summary report in Appendix C-1.

The four targets were also assessed by the Qualified Marine Archaeologist (QMA) at Goodwin Associates and determined to be debris not found to have cultural significance nor warrant avoidance (see SAP Appendix D, Table V-1 of Goodwin report).





**Figure 8.2-1**  
*SAP-1 Seafloor Features. Blue box marks the 300 m square area boundary.*



Lease Area OCS-A 0522 SAP

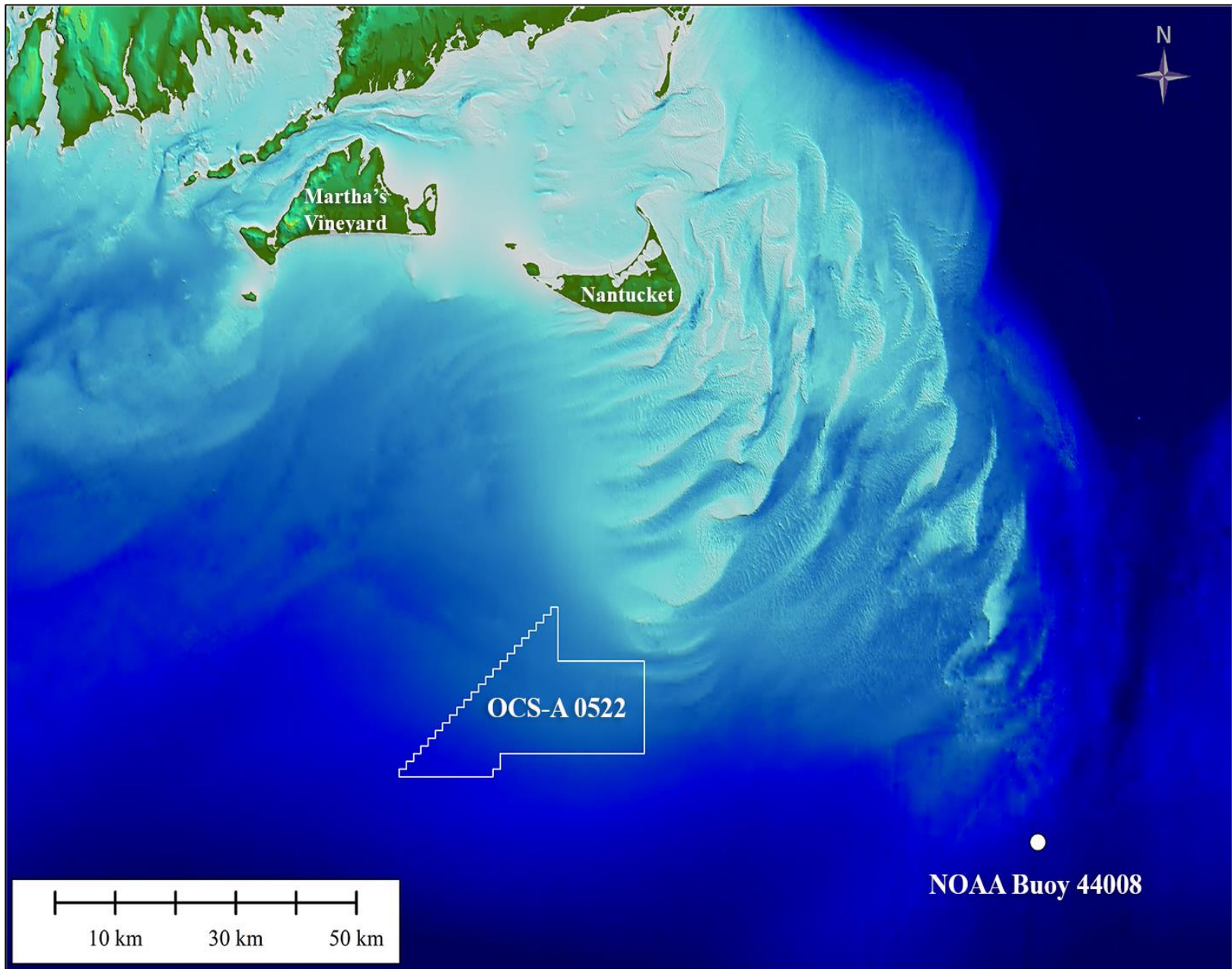
**Figure 8.2-2**  
*SAP-2 Seafloor features. Blue box marks the 300 m square area boundary.*

### **8.3                    *Meteorological and Oceanographic Conditions***

As metocean data is scarce near Lease Area OCS-A 0522, historical data from NOAA Buoy 44008 southeast of Nantucket Shoals have been referenced to provide the general background of wind and wave conditions in the region and expected at the SAP sites. The buoy is located approximately 80 km east-southeast of the Lease Area and 100 km southeast of Nantucket (Figure 8.3-1). The 2012, 2013, and 2015-2019 data sets were assessed, though some time periods of data were missing or erroneous.

In general, and certainly normal for the continental shelf off New England, wind speeds and wave heights at the buoy were higher during winter and tapered off into summer (Figures 8.3-2 and 8.3-3). The prevailing wind direction was around 200°. Waves generally traveled to the east, southeast, and south, with a prevailing wave direction of approximately 180°.

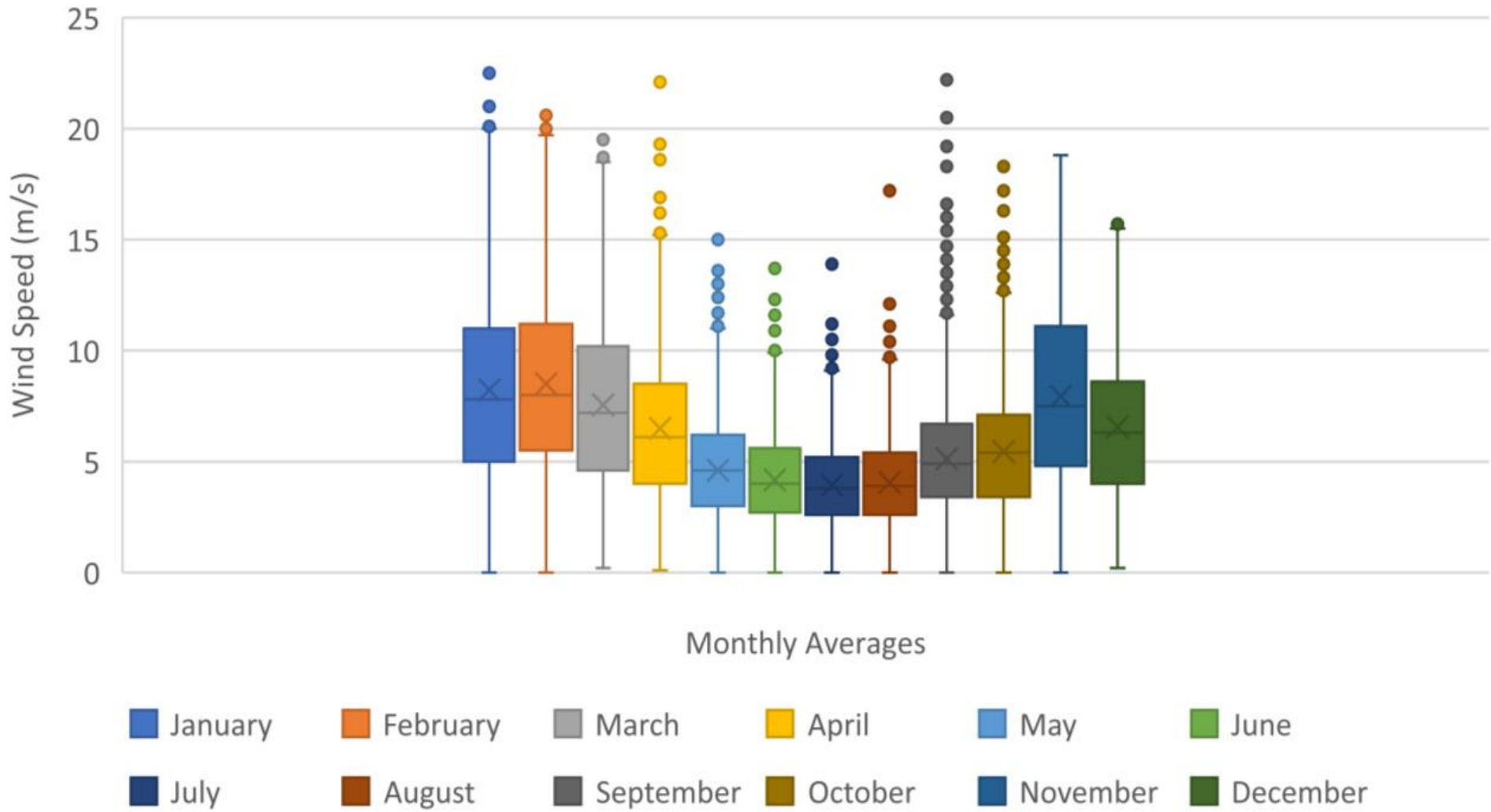
Extreme wind and wave conditions during major storms significantly impact water conditions and sedimentation in the Lease Area OCS-A 0522 region (Twichell, McClennen, Butman 1981). The storms near the Lease Area typically travel up along the east coast toward the north-northeast, as seen by the tracks of major hurricanes between 1979 and 2016 in Figure 8.3-4. Buoy 44008 shows wind speeds and significant wave heights can increase on the order of four times their typical range during the extreme weather events (Tables 8.3-1 and 8.3-2).



Location map showing the position of NOAA Buoy 44008 relative to Lease OCS-A 0522 and the islands south of the Cape.

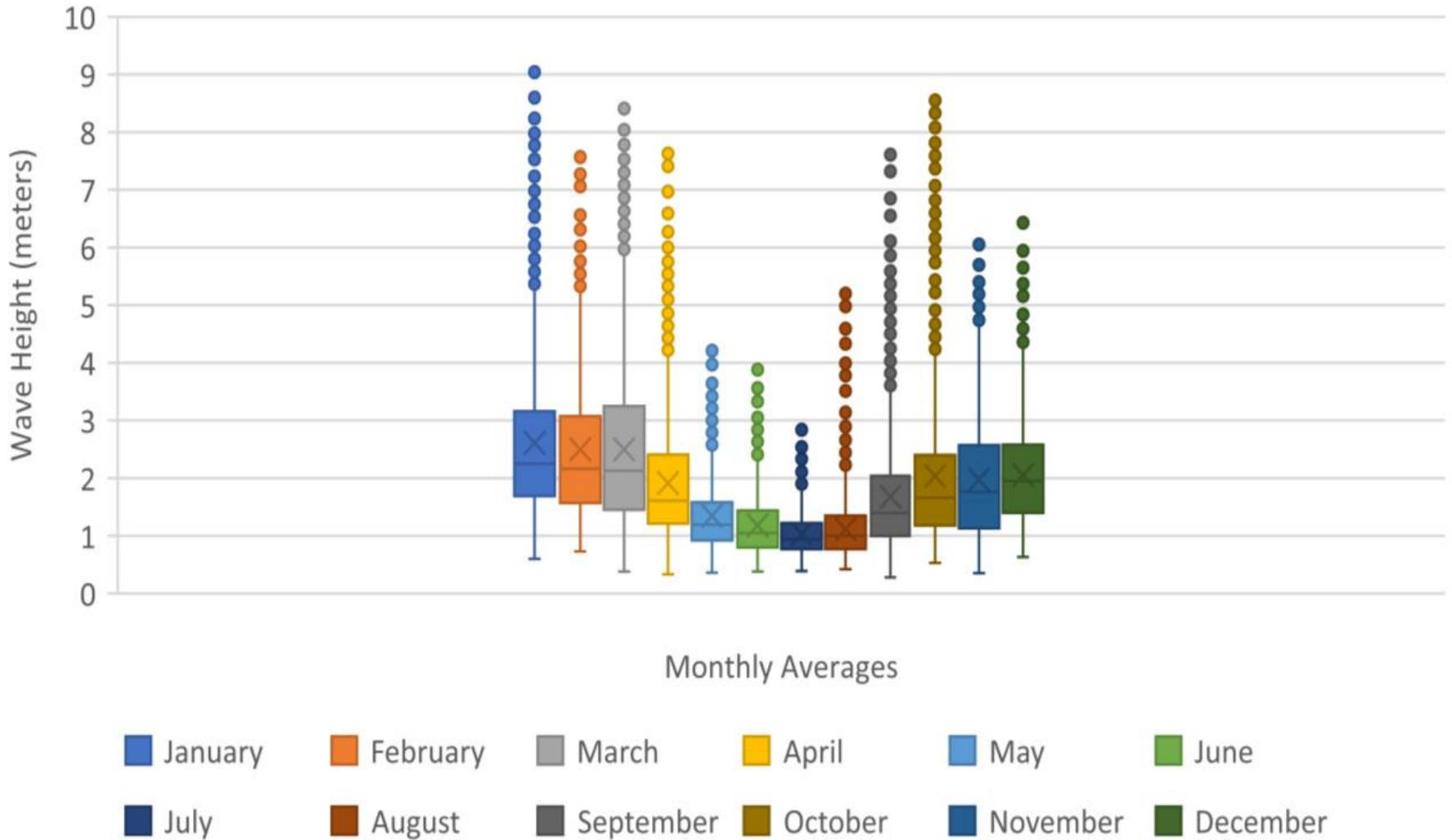
Lease Area OCS-A 0522 SAP

# Wind Speed 2012,2013, 2015-2019

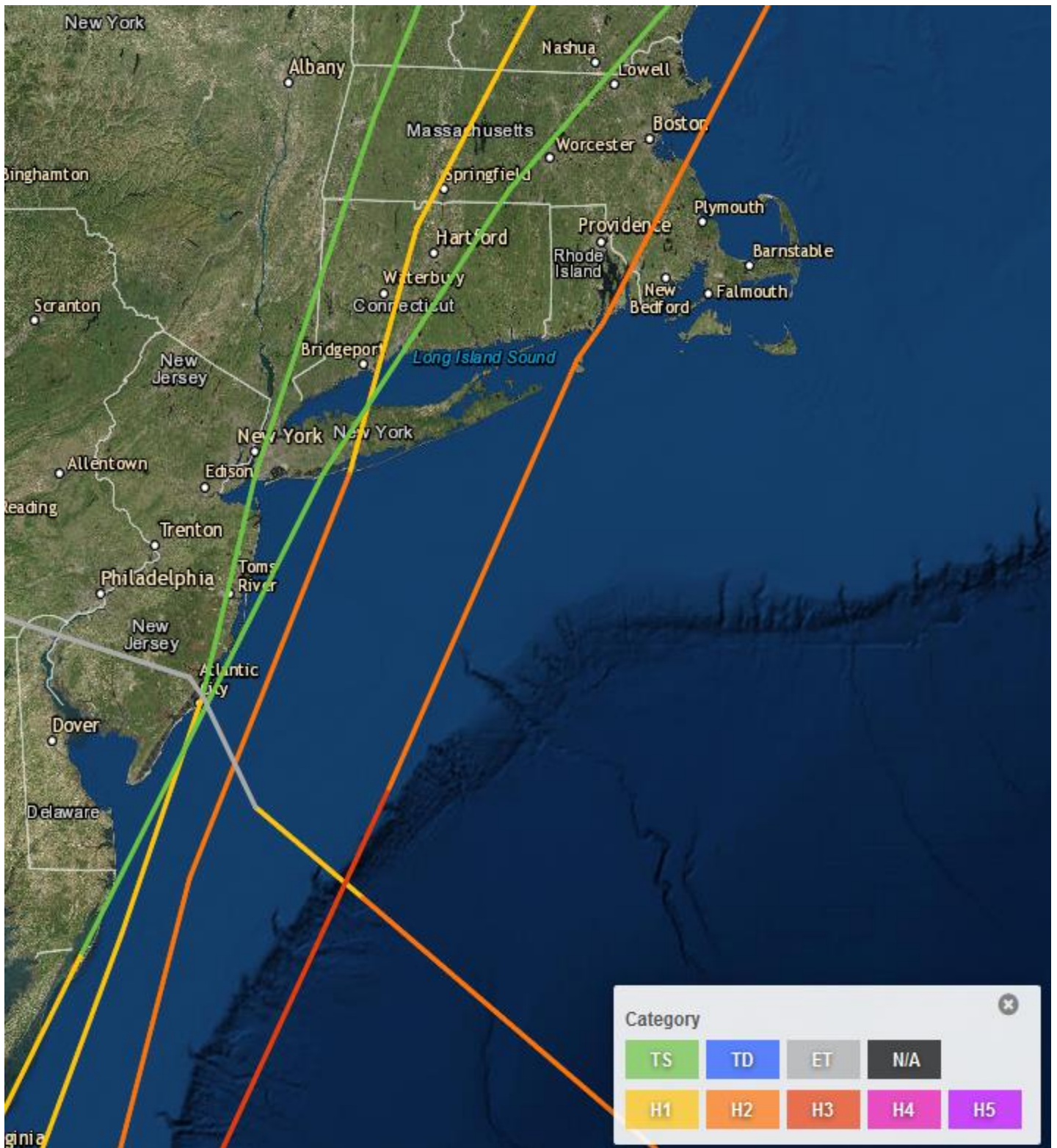


Average monthly wind speeds at Buoy 44008. Boxed areas are average speeds, dots are outlying data points.

# Significant Wave Height 2012, 2013, 2015-2019



Average monthly significant wave heights at Buoy 44008. Boxed areas are average speeds, dots are outlying data points.



Tracks of the major hurricanes during September 1979 – December 2016.

Lease Area OCS-A 0522 SAP

**Table 8.3-1 Major storms with highest significant wave heights since 1985**

Hurricane/ Storm	Year	Largest Significant Wave Height (m)
Gloria	1985	12.0
Bob	1991	8.0
Irene	1991	9.9
Floyd	1999	9.3
Sandy	2012	9.1

**Table 8.3-2 Normal versus storm conditions at NOAA Buoy 44008 during 2012, 2013, and 2015-2019.**

Condition Type	Wind speed (m/s)	Significant Wave Height (m)
Typical conditions	~5	~2
Extreme conditions	~23	~10

#### **8.4 Archaeological Surveys**

The geophysical surveys conducted in the two SAP sites on 522 met BOEM guidelines for data acquisition and coverage. The geophysical survey data within a 180 m square area around each SAP area centerpoint were reviewed and assessed for cultural resources prior to the vibracore sampling. The lack of archaeological findings allowed the areas to be cleared for sampling.

A Qualified Marine Archaeologist (QMA) at RC Goodwin & Associates further analyzed the geophysical data for historical and pre-contact cultural resources to the full lateral extent of SAP site data coverage, comprising the 300 m by 300 m area (22 acres) (984 ft by 984 ft) of the seafloor and shallow subsurface in each SAP study area. No sonar targets or magnetic anomalies possibly indicative of historic shipwrecks or artifacts are present and no seismic reflectors suggestive of buried paleofeatures are apparent in the subbottom profile data. No man-made hazards, including acoustic targets or magnetic anomalies suggestive of shipwrecks, debris, abandoned fishing gear, cables, pipelines and ordnance were apparent in either SAP study area.

The QMA found no evidence in the data of shallow subsurface paleo features that could be indicative of former glacial meltwater streams or fluvial channels. Vibracore samples did not recover any peat layers that could be indicative of potential terrestrial soils.

The QMA recommended a determination of “no historic properties” affected (36 CFR 800.4) for the two SAP areas, SAP-1 and SAP-2.

For more detailed information regarding the cultural resource assessment of the SAP sites refer to the RC Goodwin report in Appendix D.

## 8.5 Benthic Survey

To characterize surficial sediment conditions and identify benthic habitat in the SAP study areas, sediment grab samples were collected, and towed underwater video transects were run in late 2019 by Alpine Ocean. Locations are shown on Figures 8.1-1 to 8.1-3.

The grab sediments were processed, analyzed, and interpreted for benthic infaunal community characteristics by RPS Ocean Science of South Kingstown, Rhode Island. Methodology, sampling and laboratory protocols, and results are detailed in Appendix E.

The video transects recorded bottom conditions and macrofauna at sizes >4 cm, which were limited to a total of 15 organisms, primarily *Cancer spp.* crabs, snails, and skates. Figure 8.5-1 is a representative image of bottom conditions characterized as sand/mud along the VT01 transect in SAP-1, with no evident macrofauna. Figure 8.5-2 is a representative image from VT02 on SAP-2 showing a *Cancer spp.* crab. Bottom conditions along VT02 also consisted of sand/mud, with varying amounts of shell rubble or hash.

The benthic community analysis was conducted on three grab samples. Multiple sediment sampling attempts were incomplete at one location (GB03 on SAP-1) due to the presence of clam shells. Analysis indicated primarily worm hash and amphipods.

Review of underwater video transects, vibracores photographs and analyses of sediment grab samples at and around the planned buoy deployment locations found no evidence of sensitive or complex habitats, no evidence of sensitive macrofaunal communities and only limited epifaunal activity. No aquatic vegetation, evidence of fishing activity, encrusting or colonial organisms, and anthropogenic debris were observed in the still images examined from the video transections.

Benthic habitat classifications (CMECS) along the underwater video transects in the Lease Area OCS-A 0522 SAP study areas have been overlain on sonar imagery (MBES depth surface, slope gradient, and side scan mosaic) to show the correlation of the datasets. These maps are provided in Appendix D of the Survey Summary Report, which is included as Appendix C-1 of the SAP.

As noted in the Survey Summary Report (in Appendix C-1 of the SAO), classification of the habitats observed on the video and in the grabs correlates very well with the sonar reflectivity evident on the imagery. Within the troughs, the video and grab samples show higher concentrations of shell substrate, classified in CMECS as Biogenic Shell Rubble or Hash, atop a sandy substrate. Outside of the troughs, only fine grain sand and mud substrate was present, classified as Fine Sand/Mud.

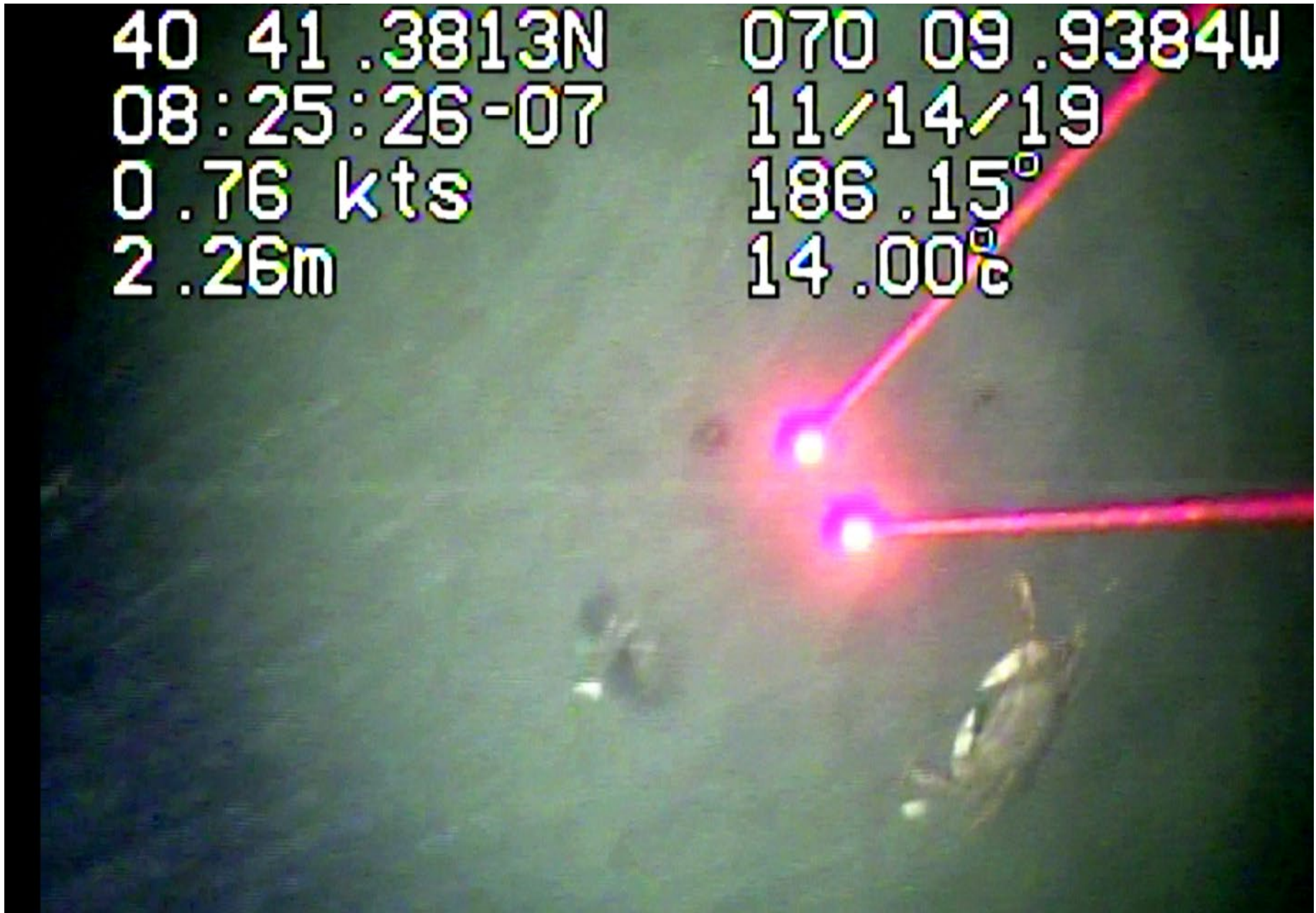
## 9.0 AFFECTED ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

BOEM's regulations at 30 CFR §585 entitled *Renewable Energy and Alternate Uses of Existing Facilities on the Outer Continental Shelf* and BOEM's 2019 SAP Guidelines recognize that metocean buoys in particular have fewer impact-producing features on marine resources due to their limited environmental footprint than many other activities under its regulatory purview. As





Representative still image of video transect data from VT01: sand/mud with no evident macrofauna.



Representative screenshot from VT02 showing a Cancer sp. crab below and to the right of the lasers.

previously described in Section 3.2, because the NEPA analyses conducted by BOEM in 2014 for the entire WEA included as part of its scope potential impacts from up to 10 metocean buoys (or a lesser number of the more impact-producing meteorological towers) on leases to be issued within the WEA; some resource categories (water quality; biological resources; threatened or endangered species; sensitive biological resources or habitats; archaeological resources; social and economic conditions; coastal and marine uses; consistency certifications, and Other resources, conditions and activities) which have already undergone previous NEPA analysis by BOEM do not need to be re-analyzed in this SAP. These categories and resources, listed in Section 3.2, are considered categorical exclusions and are not re-assessed here.

The categories and resources in the following sections are assessed within the 300 m by 300 m (984 ft by 984 ft) deployment study area of each metocean buoy proposed for Vineyard Wind Northeast in Lease Area OCS-A 0522.

### **9.1 Categories to Be Assessed**

As required in 30 CFR §585.611(b)(1) and further specified for metocean buoys in Table 2 of BOEM's 2019 SAP Guidance, the following sections describe existing conditions based upon the field surveys described in Section 8.0 in these subject areas:

#### **Hazard information: meteorology, oceanography, sediment transport, geology, and shallow geological or manmade hazards**

Additional resources are also addressed herein, including archaeological and biological resources, as required under 30 CFR §585.610(b)(1-5) and further specified for metocean buoys in Table 2 of BOEM's 2019 SAP Guidance.

**Geotechnical surveys:** Geophysical surveys with shallow sampling methods, such as vibracores or grab samples, may be sufficient for metocean buoys.

**Biological survey:** The level of biological information collected should be commensurate with the potential impacts from the proposed SAP activity. For example, metocean buoys may have few impact-producing factors that affect protected species or critical habitat due to their limited environmental footprint. Any activity that has several impact-producing factors, such as pile driving, may require more information regarding impacted biological resources and habitat (Table 2, BOEM's 2019 SAP Guidance).

#### **Archaeological resources**

**Air quality** is also addressed below as required in 30 CFR §585.610(a) and 30 CFR §585.659(2).

Potential impacts to these resources from proposed SAP activities and measures to avoid, minimize or mitigate these impacts are described below.

## **9.2 Surficial and Shallow Subsurface Geology**

For both SAP areas, based on the sediments found on and below the seafloor in the upper 3 m (homogenous fine sand with silt and variable shell content), there will be negligible to minor impact from installation and operation of the buoy(s). These impacts include (1) some typical settling of the mooring weight into the seabed, (2) minor scour possible around the weight, and (3) chain sweep on the seafloor around the weight. The absence of any size of mobile seafloor features (ripples, megaripples, sand waves) suggests minimal bottom currents are operating in the area, so scour is expected to be minimal.

Total area of direct impact from installation of the system is estimated at up to 1.8 m<sup>2</sup> (19.38 SF). Vertical linear depth of impact is estimated at up to 2.5 m (8 ft) based on the existing fine-grained relatively compact deep-water marine sediments and potential total weight used to hold the mooring.

Estimated volume of sediments that would be temporarily displaced due to settlement of the mooring weight is expected to be 10 m<sup>3</sup> (13 cubic yards).

Area of surficial seafloor impact due to chain sweep, estimated at an approximate 74.4 m (244 ft) radius around the weight, is approximately 17,381 m<sup>2</sup> (187,000 SF or 4.3 acres).

## **9.3 Shallow Hazards**

None of the surficial or subsurface features identified within the SAP site limits are considered hazards due to their minimal sizes and locations relative to the proposed buoy weight deployment positions. As there are no hazards identified on or below the seafloor in either SAP area, there will be no impact from installation of the buoy. Furthermore, there are no anticipated hazardous or adverse conditions that could significantly impact the buoy system.

## **9.4 Benthic Resources**

Direct, minor impact on the benthos from installation of the buoy system would include some injury and possibly mortality of epifauna and infauna from the mooring weight sinking into the seabed. This will consolidate and displace benthic habitats forcing organisms into surrounding areas. Indirect impacts from suspended sediment on the surrounding seafloor immediately after mooring weight placement are expected to be negligible due to very little expected resuspended material.

Some habitat alteration may occur, as a new hard substrate is introduced where a relatively soft sediment seabed existed previously. Sessile benthic communities (encrusting) adapted to deep water hard bottom areas may develop.

Operational impacts from the mooring chain sweep are anticipated to be negligible to minor, as the chain does not sink very far into the seabed but will create a dynamic equilibrium at the sediment-water interface due to the periodic scraping of the seafloor. The area of impact will be controlled by the tidal current flow and/or ocean circulation.

Finally, direct, minor impact from removal of the buoy system is expected in the form of injury or mortality to epifaunal communities attached to the mooring weight when it is removed from the seafloor. Subsequent recolonization of the underlying unconsolidated sediment by original epifaunal and infaunal organisms will occur fairly rapidly, given the limited area of impact and the large surrounding area of undisturbed habitat. Similar to installation, mooring removal will have negligible impact due to very little resuspended sediments mobilized into the water column.

In summary, the overall small area of impact compared to the large source area of similar undisturbed habitat adjacent to it, is expected to result in rapid recovery of benthic resources following removal of the met-ocean buoy, as has been observed following temporary physical disturbance in similar habitats (e.g., Guerra-García et al. 2003, Schaffner 2010). Thus, potential long-term impacts to benthic resources from SAP activities are anticipated to be negligible, if any.

#### **9.5            *Oceanography and Meteorology***

The placement of a metocean buoy in either of the SAP areas will not significantly affect the ocean current circulation or wind and wave patterns locally or regionally. The footprint of the mooring weight, diameter of the mooring cable, and size of the buoy are not large and will not cause significant impact to the flow of air or water.

The only negligible-minor impact will be slight turbulent flow created from the mooring weight just above the bottom and the resultant localized and limited scour around the weight. While there are no measurements of bottom current speed and direction in the SAP areas or Lease Area OCS-A 0522, the seafloor features present are not indicative of fast-moving currents. Therefore, only a minor amount of scour around the mooring weight is predicted.

#### **9.6            *Archaeological Resources***

Since no recorded or potential historic or pre-contact submerged cultural resources have been identified within either of the SAP areas, there is no impact to assess.

## 9.7 Air Quality

EPA has air quality jurisdiction over the portion of the Outer Continental Shelf (OCS) where the proposed SAP activities will take place (see 30 CFR §585.659). However, EPA's Outer Continental Shelf Air Regulations, which establish federal air pollution control requirements for OCS sources<sup>1</sup>, do not apply to the proposed activities (see 40 CFR §55). That is because the metocean buoy(s) will not contain any combustible fuel and will not have the potential to emit any criteria air pollutants. Instead, the buoy(s) will be powered by clean, renewable energy (e.g. batteries, solar, wind, and/or fuel cells). In addition, the vessels used for the deployment, maintenance, and recovery of the metocean buoy(s) will not attach to the seafloor (i.e. anchor) or securely attach to the buoy(s) for the purposes of maintaining their position. Therefore, none of the equipment or vessels involved in the proposed activities will become OCS sources subject to regulation under 40 CFR §55.

Although the proposed activities are not regulated under 40 CFR §55, there will be emissions from the main propulsion engines, auxiliary engines, and auxiliary equipment on marine vessels that are used to deploy, maintain, and recover the metocean buoy(s). In order for BOEM to assess impacts to air quality resulting from the proposed activities, a conservative estimate of emissions was developed based on the following assumptions:

- ◆ Installation of each metocean buoy at the SAP site will take approximately four hours and will require one vessel trip from New Bedford Harbor.
- ◆ Annually, O&M of the buoy(s) will require approximately one vessel trip from New York Harbor and two vessel trips from Woods Hole, Massachusetts, with each maintenance activity lasting approximately one eight-hour day (at the SAP site).
- ◆ The metocean buoy(s) will be deployed for five years.
- ◆ Decommissioning of each metocean buoy at the SAP site will take up to approximately 24 hours and will require one vessel trip from New Bedford Harbor.

The table below provides an estimate of the total tons of nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOC), carbon monoxide (CO), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>, particulate matter with a diameter less than or equal to 10 and 2.5 μm, respectively), sulfur oxides (SO<sub>x</sub>), carbon dioxide equivalent (CO<sub>2</sub>e), and hazardous air pollutants (HAPs) emissions.

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<sup>1</sup> An OCS source is defined as "any equipment, activity, or facility which: 1) Emits or has the potential to emit any air pollutant; 2) Is regulated or authorized under the Outer Continental Shelf Lands Act ("OCSLA") (43 U.S.C. §1331 et seq.); and 3) Is located on the OCS or in or on the waters above the OCS. This definition shall include vessels only when they are: 1) Permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing or producing resources therefrom, within the meaning of Section 4(a)(1) of OCSLA (43 U.S.C. §1331et seq.); or 2) Physically attached to an OCS facility, in which case only the stationary sources aspects of the vessels will be regulated." See 40 CFR §55.2.

**Table 9.7-1 Air Emissions from SAP Metocean Buoy Activities**

Activity	Air Emissions (US tons)							
	NO <sub>x</sub>	VOC	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	CO <sub>2e</sub>	HAPs
Deployment	0.39	0.01	0.09	0.01	0.01	0.00	27	0.00
Maintenance	5.58	0.10	1.34	0.19	0.18	0.02	382	0.02
Decommissioning	0.51	0.01	0.12	0.02	0.02	0.00	35	0.00
<b>Total</b>	<b>6.49</b>	<b>0.12</b>	<b>1.56</b>	<b>0.22</b>	<b>0.21</b>	<b>0.02</b>	<b>444</b>	<b>0.02</b>

Air emissions associated with the installation, operation, and decommissioning of the metocean buoy(s) will only occur periodically for very short durations throughout the Site Assessment term. Since the SAP Study Areas are approximately 62 km (34 NM/39 mi) at their closest (SAP-1) from the nearest landmass, the Study Areas are situated to the southeast of the mainland, and prevailing winds are from the northwest, the emissions within the SAP Study Areas are unlikely to have any effect on onshore areas. Furthermore, the low level of additional vessel traffic from the proposed activities will likely contribute only a small fraction of air pollution that is already caused by marine vessel traffic within the region. Measures to minimize emissions from vessels used during deployment, maintenance, and decommissioning of the metocean buoy(s) will be consistent with industry standard, area-wide measures for marine vessels (e.g. the use of low sulfur fuels and internal combustion engines that are in compliance with applicable air quality regulatory standards). Thus, the potential impacts of the proposed activities to ambient air quality are expected to be negligible, if any.

**9.7.1 Mitigation Measures**

The Proponent will use metocean buoy(s) that do not contain any combustible fuel and will not have the potential to emit any criteria air pollutants. Instead, the buoy(s) will be powered by clean, renewable energy (e.g. batteries, solar, wind, and/or fuel cells). Measures to avoid, minimize, and mitigate emissions from vessels will be consistent with industry standard, area-wide measures for marine vessels. For example, air emissions from vessels will be minimized through the use of low sulfur fuels and through the use of internal combustion engines that are in compliance with applicable air quality regulatory standards.

**9.8 Additional Avoidance, Minimization, and Mitigation Measures**

**9.8.1 Measures to Reduce Impacts to Marine Mammals, Sea Turtles and Other Protected Species**

The Proponent will comply with applicable regulations in Table 3.1-1, applicable Lease stipulations in Table 3.1-2, and implement best management practices in Table 9.8-1 to eliminate or minimize the potential for adverse environmental impacts to protected species and other significant

resources during buoy installation, operation, and decommissioning. These will include measures to avoid and prevent accidental events such as fuel spills (see Section 4.4), to ensure that any unavoidable impacts are negligible.

The Proponent will comply with applicable BOEM Standard Operating Conditions (SOCs) on reducing impacts to marine mammals, sea turtles and protected species included in Section 4 of Addendum C in the Lease for OCS-A 0522 unless otherwise directed by BOEM. These include:

### **Vessel Strike Avoidance**

Except under extraordinary circumstances, or if a waiver is granted, the Proponent will adhere to the vessel strike avoidance measures included in the SOCs, which are summarized as follows:

- ◆ The Proponent’s vessel operators and crews will maintain a vigilant watch for marine mammals, sea turtles, and giant manta rays, and slow down or stop their vessel to avoid striking these protected species.
- ◆ All vessel operators will comply with the 10 knot speed restriction in any Dynamic Management Area (DMA); vessels 19.8 m (65 ft) in length or longer will operate at speeds no greater than 10 knots from November 1 through July 31; and all vessel operators will reduce speed to 10 knots when mother/calf pairs, pods, or large assemblages of marine mammals are observed near a transiting vessel.
- ◆ Vessel operators will monitor NMFS’s North Atlantic right whale reporting systems from November 1 through July 31 and whenever a DMA is established where vessels operate.
- ◆ 100 m (328 ft) or greater separation distance will be maintained between all transiting vessels and any sighted ESA-listed whales or humpback whales.
- ◆ Specific to North Atlantic right whale [NARW], 500 m [1,640 ft] or greater separation distance will be maintained between all transiting vessels and any sighted NARW or unidentified large marine animal.
- ◆ If a whale is observed within 100 m (328 ft) of a transiting vessel, the vessel will shift its engines to neutral and will not re-engage its engines until the whale has moved out of the vessel path and beyond 100 m (328 ft).
- ◆ Transiting vessels will maintain a separation distance of 50 m (164 ft) from sea turtles, pinnipeds, and dolphins, except for bow-riding dolphins and pinnipeds that approach the vessel.

In accordance with the SOCs, the Proponent will also ensure that vessel operators, employees, and contractors involved in the proposed activities are briefed on the above vessel strike avoidance measures as well as their responsibilities for ensuring that trash and debris are not intentionally or accidentally discharged into the marine environment.



## **Entanglement Avoidance**

These measures are described in Project Equipment Section 4.1. The Proponent will utilize the best available mooring system to comply with BOEM's requirements in the OCS-A 0522 Lease, Addendum C, Stipulation 4.1.4 entitled Entanglement Avoidance, to minimize the risk of entanglement or entrainment of marine mammals, manta rays, and sea turtles.

## **Reporting Observed Impacts to Protected Species**

In the event that any takes are observed during SAP activities of listed marine mammals, sea turtles, sturgeon, or giant manta ray resulting in injury or mortality, these impacts will be reported by the Proponent within 24 hours to BOEM and NMFS. Vessel operators and offshore SAP support staff will be briefed on these requirements.

## **Reporting Injured or Dead Protected Species**

The Lessee must ensure that sightings of any injured or dead protected species (see below) are reported to BOEM, NMFS and the NMFS Greater Atlantic (Northeast) Region's Standing Hotline (866-755-6622 or current) within 24 hours of sighting. If the Lessee is responsible for the injury or death, the Lessee's vessel must assist in any salvage effort as requested by NMFS. In the event reporting is necessary, reporting forms provided in the Lease Addendums will be used. Copies are in Appendix B.

### **9.8.2 Measures to Reduce Impacts to Fisheries**

In accordance with Lease Stipulation 4.1.3, the Proponent has developed a publicly available Fisheries Communication Plan (FCP) that describes the ways the Proponent will communicate with fisheries stakeholders potentially affected by the development of the Proponent's offshore wind projects (including activities pertaining to metocean buoys). The document continues to evolve with continuous feedback and guidance from fishermen, fishing organizations, and regulatory agencies. The FCP includes contact information for individuals retained by the Proponent as its primary point(s) of contact with fisheries stakeholders (i.e. the Fisheries Liaison(s)). The current version of the FCP can be found at the following website link: <https://www.vineyardwind.com/fisheries>.

### **9.8.3 Measures to Reduce Impacts to Marine Navigation**

As listed on Table 9.8-1 under **Transportation and Vessel Traffic**, the metocean buoy(s) will be equipped with the proper safety lighting, markings, and signal equipment per USCG Private Aids to Navigation (PATON) requirements, including USCG Navigation and Vessel Inspection Circular 01-19. Coordination with the USCG will occur prior to deployment (see Table 3.3-1).

The metocean buoy(s) will be sited within the MA WEA, which, after public comment, was developed to avoid shipping lanes and USCG-designated Traffic Separation Schemes.

The metocean buoy(s) will be located beyond FAA jurisdiction, will not exceed 61 m (200 ft) in height and therefore do not require any aviation obstruction lighting per BOEM’s (2021) *Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development*.

**9.8.4 Measures to Reduce Impacts to Birds and Bats**

As noted in Sections 4.2.2.1.3 (birds) and 4.2.2.2.3 (bats) in BOEM’s 2014 EA for the MA WEA, due to the low height and simple design of metocean buoy(s), there are few opportunities for avian species to perch or nest. BOEM found metocean buoys in the WEA would have negligible impacts on bird and bat species. Additional findings are presented under Avian Resources in Table 9.8-1.

**9.8.5 Best Management Practices**

The SAP activities will comply with BOEM’s best management practices (BMPs) outlined in Attachment B of BOEM’s (2019) *Guidelines for Information Requirements for a Renewable Energy Site Assessment Plan (SAP)*. Table 9.8-1 identifies how the SAP activities will address or adhere to all of BOEM’s BMPs that are applicable to buoys. However, it is important to recognize that the SAP activities will implement additional avoidance, minimization, and mitigation measures beyond those prescribed by BOEM (as described above throughout Section 9).

**Table 9.8-1 BOEM’s SAP Best Management Practices**

Best Management Practices: BOEM 2019 SAP Guidance	SAP Activities
<b>Preconstruction Planning</b>	
Lessees shall minimize the area disturbed by preconstruction site monitoring and testing activities and installations.	This SAP proposes the use of up to two metocean buoys to obtain Lease-specific data. Buoys minimize disturbed areas as compared with meteorological towers. Similarly, the Proponent’s preconstruction geophysical and geotechnical survey work is designed to minimize impacts in accordance with approved survey plans and lease requirements. Wildlife studies have employed minimally invasive techniques for observing species and habitat presence.
Lessees shall contact and consult with the appropriate affected Federal, state, and local agencies early in the planning process.	The Proponent has engaged with federal, state, local agencies, and stakeholder groups to identify and address any issues of potential concern. This engagement has informed the design of the Project and the activities presented in the SAP.
Lessees shall consolidate necessary infrastructure requirements whenever practicable.	The Proponent has made every effort to consolidate infrastructure requirements. The maximum horizontal radius of the mooring chain contacting the seafloor will not be more than 74.4 m and will be within the assessed 300 m x 300 m (984 ft by 984 ft) buoy deployment area. Any impact from installation vessels will be very limited, as the installation will be performed without anchoring.

**Table 9.8-1 BOEM’s SAP Best Management Practices (Continued)**

Best Management Practices: BOEM 2019 SAP Guidance	SAP Activities
<b>Preconstruction Planning</b>	
<p>Lessees shall develop a monitoring program to ensure that environmental conditions are monitored during construction, operation, and decommissioning phases. The monitoring program requirements, including adaptive management strategies, and shall be established at the project level to ensure that potential adverse impacts are mitigated.</p>	<p>A monitoring program should be commensurate with potential impacts from a proposed activity. The Proponent’s monitoring program for each metocean buoy includes appropriate marine notifications of buoy locations, including issuance of Offshore Wind Marine Updates and coordination with USCG to issue Notices to Mariners for buoy deployment, maintenance, and recovery activities; on- going locational monitoring of the buoy system by GPS and alerts if the buoy moves outside the designated buoy watch circle; efforts to minimize and remove marine debris associated with SAP activities; submission of compliance reports to BOEM as required, including recommendations for adaptive management measures; and removal of each metocean buoy system as described in Section 7.0.</p>
<b>Seafloor Habitats</b>	
<p>Lessees shall conduct seafloor surveys in the early phases of a project to ensure that the alternative energy project is sited appropriately to avoid or minimize potential impacts associated with seafloor instability or other hazards.</p>	<p>The Project is located within the Massachusetts Wind Energy Area (MA WEA), which BOEM has identified as appropriate for development of wind energy. In addition, the Proponent has conducted geophysical and geotechnical surveys under a BOEM-approved Survey Plan, to confirm that site conditions are suitable for the installation of the metocean buoys.</p>
<p>Lessees shall conduct appropriate pre-siting surveys to identify and characterize potentially sensitive seafloor habitats and topographic features.</p>	<p>Pre-siting surveys have been conducted to identify and characterize potentially sensitive seafloor habitats and topographic features. See Sections 8.0 and 9.0 and related appendices for detailed findings. No sensitive seafloor habitats have been identified within the metocean buoy deployment study areas.</p>
<p>Lessees shall avoid locating facilities near known sensitive seafloor habitats, such as coral reefs, hard-bottom areas, and chemosynthetic communities.</p>	<p>No sensitive seafloor habitats have been identified within the metocean buoy deployment study areas.</p>
<p>Lessees shall avoid anchoring on sensitive seafloor habitats.</p>	<p>Installation of the metocean buoy(s) will be performed without vessel anchoring. The mooring weight for each buoy will not be placed on sensitive seafloor habitats, as none have been identified in the study areas.</p>
<p>Lessees shall reduce scouring action by ocean currents around foundations and to seafloor topography by taking all reasonable measures and employing periodic routine inspections to ensure structural integrity.</p>	<p>There will be no foundations. Little to no scour development around the chain is expected due to minimal currents and relatively cohesive seabed conditions. The Proponent will conduct periodic inspections of the metocean buoys.</p>

**Table 9.8-1 BOEM’s SAP Best Management Practices (Continued)**

Best Management Practices: BOEM 2019 SAP Guidance	SAP Activities
<b>Marine Mammals and Sea Turtles</b>	
Vessels related to project planning, construction, and operation shall travel at reduced speeds when assemblages of cetaceans are observed, and maintain a reasonable distance from whales, small cetaceans, and sea turtles as determined during site-specific consultations.	The Proponent will adhere to legally mandated speed, approach, and other vessel requirements included in Addendum C of the Lease for OCS-A 0522, unless BOEM approves a waiver. The National Oceanic and Atmospheric Administration’s vessel strike guidance will also be implemented. Additional measures to protect marine mammals and sea turtles are described in Section 9.8.1.
Lessees shall minimize potential vessel impacts to marine mammals and turtles by requiring project-related vessels to follow the National Marine Fisheries Service (NMFS) Regional Viewing Guidelines while in transit. Operators shall be required to undergo training on applicable vessel guidelines.	Project vessels will comply with the NMFS Regional Viewing Guidelines while in transit (see Section 9.8.1). In addition, vessel operators will undergo training on applicable guidelines.
Lessees shall use the best available mooring systems using buoys, lines (chains, cables, or coated rope systems), swivels, shackles, and anchors that prevent any potential entanglement or entrapment of marine mammals and sea turtles, while ensuring the safety and integrity of the structure or device.	Each metocean buoy will utilize entanglement or entrapment avoidance measures agreed upon with BOEM and NMFS. These are expected to include using a single steel chain to link the bottom mooring weight with the floating buoy (see Section 4.1). All attachment lines will utilize one or more of the following measures to reduce entanglement risk: shortest practicable line length, rubber sleeves, weak-links, chains, cables, or similar equipment types that prevent lines from looping or wrapping around animals or entrapping protected species. No entanglement or entrapment of marine mammals and sea turtles is expected.
Lessees shall locate cable landfalls and onshore facilities so as to avoid impacts to known nesting beaches.	The metocean buoy(s) will not require any cable landfalls or onshore facilities.
<b>Fish Resources and Essential Fish Habitat</b>	
Lessees shall conduct pre-siting surveys (may use existing data) to identify important, sensitive, and unique marine habitats in the vicinity of the projects and design the project to avoid, minimize, or otherwise mitigate adverse impacts to these habitats.	Pre-siting surveys have been conducted to identify and characterize potentially sensitive marine habitats. See Section 9.0 for detailed findings. No sensitive marine habitats have been identified within the metocean buoy deployment study areas.
Lessees shall minimize seafloor disturbance during construction and installation of the facility and associated infrastructure.	Seafloor disturbance will be minimized to the extent practicable. The maximum expected horizontal radius of the mooring chain contacting the seafloor will not be more than 74.4 m and will be within the 300 m x 300 m (984 ft by 984 ft) buoy deployment area. Any impact from installation vessels will be very limited, as the installation will be performed without anchoring.

**Table 9.8-1 BOEM’s SAP Best Management Practices (Continued)**

Best Management Practices: BOEM 2019 SAP Guidance	SAP Activities
<b>Avian Resources</b>	
The lessee shall evaluate avian use in the project area and design the project to minimize or mitigate the potential for bird strikes and habitat loss. The amount and extent of ecological baseline data required will be determined on a project-to-project basis.	Avian use and impacts to avian resources due to the installation of metocean buoys were thoroughly analyzed for the entire MA WEA in BOEM’s (2014) Revised Environmental Assessment (EA). The Revised EA found that impacts to birds are expected to be negligible. The low profile of the metocean buoy will minimize the avian use of the buoy as a perch or nesting site.
Lessees shall take measures to reduce perching opportunities.	The Revised EA found that meteorological buoys provide few perching opportunities for birds and that those opportunities would pose no threat to birds.
Lessees shall comply with Federal Aviation Administration (FAA) and USCG requirements for lighting while using lighting technology (e.g., low-intensity strobe lights) that minimize impacts to avian species.	Flashing marine navigation lighting on the metocean buoy(s) will comply with USCG requirements and are expected to have characteristics that minimize impacts to avian species.
<b>Fisheries</b>	
Lessees shall work cooperatively with commercial/recreational fishing entities and interests to ensure that the construction and operation of a project will minimize potential conflicts with commercial and recreational fishing interests.	As described in BOEM’s Revised EA, “activities related to the installation/operation of the meteorological towers and buoys would not measurably impact commercial or recreational fishing activities.”
Lessees shall review planned activities with potentially affected fishing organizations and port authorities to prevent unreasonable fishing gear conflicts. Lessees shall minimize conflict with commercial fishing activity and gear by notifying registered fishermen of the location and time frame of the project construction activities well in advance of mobilization with updates throughout the construction period.	The SAP study areas for the metocean buoy(s) were selected to avoid heavily trawled areas. The Proponent will issue Offshore Wind Marine Updates and coordinate with USCG to issue Notices to Mariners for buoy deployment, maintenance, and recovery activities. Coordinates for the buoys will be provided to fishermen and mariners.
Lessees shall use practices and operating procedures that reduce the likelihood of vessel accidents and fuel spills.	The Proponent is firmly committed to full compliance with applicable safety and environmental protection regulations and codes. The oil spill response measures are described in Section 4.4.
Lessees shall avoid or minimize impacts to the commercial fishing industry by marking applicable structures (e.g., wind turbines, wave generation structures) with USCG-approved measures (such as lighting) to ensure safe vessel operation.	The metocean buoy(s) will be equipped with the proper safety lighting, markings, and signal equipment per USCG Private Aids to Navigation (PATON) requirements, including USCG Navigation and Vessel Inspection Circular 01-19. Coordination with the USCG will occur prior to deployment (see Table 3.3-1).

**Table 9.8-1 BOEM’s SAP Best Management Practices (Continued)**

Best Management Practices: BOEM 2019 SAP Guidance	SAP Activities
<b>Coastal Habitats</b>	
Lessees shall avoid hard-bottom habitats, including seagrass communities and kelp beds, where practicable, and restore any damage to these communities.	No sensitive seafloor habitats have been identified within the metocean buoy deployment study areas.
Lessees shall implement turbidity reduction measures to minimize effects to hard-bottom habitats, including seagrass communities and kelp beds, from construction activities.	No hard-bottom habitats have been identified within the metocean buoy deployment study areas.
Lessees shall minimize effects to seagrass and kelp beds by restricting vessel traffic to established traffic routes.	No sensitive seafloor habitats have been identified within the metocean buoy deployment study areas. If sensitive resources are known along transit routes, vessels will be advised to avoid the area to the greatest extent practicable.
<b>Transportation and Vessel Traffic</b>	
Lessees shall site alternative energy facilities to avoid unreasonable interference with major ports and United States Coast Guard (USCG)-designated Traffic Separation Schemes.	The metocean buoy(s) will be sited within the MA WEA, which, after public comment, was developed to avoid shipping lanes and USCG-designated Traffic Separation Schemes.
Lessees shall meet Federal Aviation Administration (FAA) guidelines for sighting and lighting of facilities.	The metocean buoy(s) will be located beyond FAA jurisdiction, will not exceed 61 m (200 ft) in height and therefore do not require any aviation obstruction lighting per BOEM’s (2021) <i>Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development</i> .
Lessees shall place proper lighting and signage on applicable alternative energy structures to aid navigation per USCG circular navigation and vessel inspection circular 07-02 (USCG 2007) and comply with any other applicable USCG requirements.	The metocean buoy(s) will be equipped with the proper safety lighting, markings, and signal equipment per USCG Private Aids to Navigation (PATON) requirements, including USCG Navigation and Vessel Inspection Circular NVIC 01-19. Coordination with the USCG will occur prior to deployment (see Table 3.3-1).
<b>Operations</b>	
Lessees shall prepare waste management plans, hazardous material plans, and oil spill prevention plans, as appropriate, for the facility.	The Proponent is firmly committed to full compliance with applicable environmental protection regulations and codes. The Project’s Oil Spill Response measures are described in Section 4.4.

**10.0 REFERENCES**

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Wilkin, J.L. 2006. "The Summertime Heat Budget and Circulation of Southeast New England Shelf Waters." *Journal of Physical Oceanography* 36: 1997-2011.



## **Appendix A**

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### Buoy Specifications

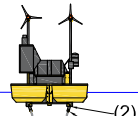
A-1 Mooring Design

A-2 **CONFIDENTIAL** Buoy (EOLOS FLS200) Technical Specifications

## A-1 Mooring Design

OCS-A-522 LLC  
 SITE: SAP-2  
 40° 40' 21.11909" N  
 70° 13' 07.76668" W

▽ SEA SURFACE



(4) 4 x 3 m 1" BRIDLE CHAIN  
 (8) 10 m 1" CHAIN  
 (2) (3) (5) (6) (7) (9) (10) (11)

(12) 25.5 m 1-1/4" CHAIN

DRAWING NOT TO SCALE

(13) (14)

(15) 27.5 m 1-1/2" CHAIN

5000 kg ANCHOR  
 1.5m x 1.2 m x 0.6 m

(24)

(23)

(22) 27.5 m 1-1/2" CHAIN

(19)

(20)

(21)

(18) 27.5 m 1-1/2" CHAIN

(16)

(17)

SEA FLOOR - 46.6 m

Project No. _____		<b>Ocean Tech Services, LLC.</b> Marine Monitoring Systems and Surveys		
Project OCS-A-522 FLS		Drawing Title OCS-A-522 SAP-2 Mooring Design 46.6 m depth		
Customer OCS-A-522 LLC		Size	Print #	Rev & Date
Drawn JAW	Date Apr-01-2021		Sheet of	<b>1</b> Dec-28-2021
Designed BTR	Date Apr-01-2021			
Rev 1 JAW	Date Dec-28-2021	File Path and Name		
Approved	Date			

## Vineyard Northeast LLC - FLS200 BUOY

### Conceptual Mooring Component List

REVISION:		01	LATITUDE:		40° 41' 21.11909" N	
DATE:		28-Dec-21	LONGITUDE:		70° 13' 07.76668" W	
CREATED BY:		BTR	WATER DEPTH:		46.6 m	
			MOORING LENGTH:		121 m	
			CHAIN ON SEABED:		74.4 m	
			SCOPE:		2.6 : 1	
ITEM #	DESCRIPTION	SIZE	WLL	LENGTH	NOTES	HAVE
1	FLS200	FLS200				
2	(4) Isolation Shackle and Pin	1-1/4" (32mm)			Custom Made	
3	(4) Shackle (bow)	1-1/4" (32mm)	12T		Green Pin G-4163	
4	(4) Bridle chain	1" (26mm)		3m	OLC	
5	(4) Shackle (bow)	1-1/4" (32mm)	12T		Green Pin G-4163	
6	Master Link Assembly	1-1/2" (38mm)	30.5T		Crosby A-345	
7	Shackle (bow)	1-3/8" (35mm)	13.5T		Green Pin G-4163	
8	Chain	1" (26mm)		10m	OLC	
9	Shackle (bow)	1-3/8" (35mm)	13.5T		Green Pin G-4163	
10	Swivel	1-1/2" (38mm)			Crosby G-402	
11	Shackle (bow)	1-3/8" (35mm)	13.5T		Green Pin G-4163	
12	Chain	1-1/4" (32mm)		25.5m	OLC	
13	Shackle (bow)	1-3/8" (35mm)	13.5T		Green Pin G-4163	
14	Shackle (bow)	1-1/2" (38mm)	17T		Green Pin G-4163	
15	Chain	1-1/2" (38mm)		27.5m	OLC	
16	Shackle (bow)	1-1/2" (38mm)	17T		Green Pin G-4163	
17	Shackle (bow)	1-1/2" (38mm)	17T		Green Pin G-4163	
18	Chain	1-1/2" (38mm)		27.5m	OLC	
19	Shackle (bow)	1-1/2" (38mm)	17T		Green Pin G-4163	
20	Swivel	1-1/2" (38mm)			Crosby G-402	
21	Shackle (bow)	1-1/2" (38mm)	17T		Green Pin G-4163	
22	Chain	1-1/2" (38mm)		27.5m	OLC	
23	Shackle (bow)	1-1/2" (38mm)	17T		Green Pin G-4163	
24	Shackle (bow)	1-3/4" (44mm)	25T		Green Pin G-4163	
25	5,000 Kg Sinker	5,000 Kg			5T Cast Iron Sinker	
RECOVERY LINE						
1	Shackle (bow)	7/8" (23mm)	6.5T		Not welded, Used in val.	
2	Chain	3/4" (19mm)		10m	Used in validation	
3	Shackle (bow)	7/8" (23mm)	6.5T		Not welded, Used in val.	

A-2 **CONFIDENTIAL**  
Buoy (EOLOS FLS200) Technical Specifications

**This Appendix has been redacted in its entirety.**

**Appendix B**

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Forms for BOEM Reporting Requirements

**U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT**

Lease Number OCS-A 0522

**CONTACT INFORMATION FOR REPORTING REQUIREMENTS**

The following contact information must be used for the reporting and coordination requirements specified in ADDENDUM "C", Stipulation 3:

**United States Fleet Forces (USFF) N46  
1562 Mitscher Ave, Suite 250  
Norfolk, VA 23551  
(757) 836-6206**

The following contact information must be used for the reporting requirements in ADDENDUM C, Stipulation 4.4:

**Reporting Injured or Dead Protected Species**

National Oceanic and Atmospheric Administration  
Fisheries Northeast Region's Stranding Hotline  
800-900-3622

**All other reporting requirements in Stipulation 4.4**

Bureau of Ocean Energy Management  
Environment Branch for Renewable Energy  
Phone: 703-787-1340  
Email: [renewable\\_reporting@boem.gov](mailto:renewable_reporting@boem.gov)

National Marine Fisheries Service  
Northeast Regional Office, Protected Resources Division  
Section 7 Coordinator  
Phone: 978-281-9328  
Email: [incidental.take@noaa.gov](mailto:incidental.take@noaa.gov)

Vessel operators may send a blank email to [ne.rw.sightings@noaa.gov](mailto:ne.rw.sightings@noaa.gov) for an automatic response listing all current dynamic management areas.

**ENCLOSURE**

**PUBLIC**

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

APPENDIX A TO ADDENDUM "C"

Lease Number OCS-A 0522

**Incident Report: Protected Species Injury or Mortality**

*Photographs/Video should be taken of all injured or dead animals.*

Observer's full name: \_\_\_\_\_

Reporter's full name: \_\_\_\_\_

Species Identification: \_\_\_\_\_

Name and type of platform: \_\_\_\_\_

Date animal observed: \_\_\_\_\_ Time animal observed: \_\_\_\_\_

Date animal collected: \_\_\_\_\_ Time animal collected: \_\_\_\_\_

Environmental conditions at time of observation (i.e. tidal stage, Beaufort Sea State, weather):  
\_\_\_\_\_  
\_\_\_\_\_

Water temperature (°C) and depth (m/ft) at site: \_\_\_\_\_

Describe location of animal and events 24 hours leading up to, including and after, the incident (incl. vessel speeds, vessel activity and status of all sound source use):  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Photograph/Video taken: YES / NO    If Yes, was the data provided to NMFS? YES / NO  
(Please label *species, date, geographic site* and *vessel name* when transmitting photo and/or video)

Date and Time reported to NMFS Stranding Hotline: \_\_\_\_\_



**Sturgeon Information:** (please designate cm/m or inches and kg or lbs)

Species: \_\_\_\_\_

Fork length (or total length): \_\_\_\_\_ Weight: \_\_\_\_\_

Condition of specimen/description of animal: \_\_\_\_\_

Fish Decomposed: NO SLIGHTLY MODERATELY SEVERELY

Fish tagged: YES / NO If Yes, please record all tag numbers.

Tag #(s): \_\_\_\_\_

Genetic samples collected: YES / NO

Genetics samples transmitted to: \_\_\_\_\_ on \_\_\_\_ / \_\_\_\_ / 20\_\_

**Sea Turtle Species Information:** (please designate cm/m or inches)

Species: \_\_\_\_\_ Weight (kg or lbs): \_\_\_\_\_

Sex: Male Female Unknown

How was sex determined?: \_\_\_\_\_

Straight carapace length: \_\_\_\_\_ Straight carapace width: \_\_\_\_\_

Curved carapace length: \_\_\_\_\_ Curved carapace width: \_\_\_\_\_

Plastron length: \_\_\_\_\_ Plastron width: \_\_\_\_\_

Tail length: \_\_\_\_\_ Head width: \_\_\_\_\_

Condition of specimen/description of animal: \_\_\_\_\_

**Existing Flipper Tag Information**

Left: \_\_\_\_\_ Right: \_\_\_\_\_

PIT Tag#: \_\_\_\_\_

**Miscellaneous:**

Genetic biopsy collected: YES NO

Photographs taken: YES NO

**Turtle Release Information:**

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

State: \_\_\_\_\_ County: \_\_\_\_\_

**Remarks:** (note if turtle was involved with tar or oil, gear or debris entanglement, wounds, or mutilations, propeller damage, papillomas, old tag locations, etc.) \_\_\_\_\_

**Marine Mammal information:** (please designate cm/m or ft/inches)

Length of marine mammal (note direct or estimated): \_\_\_\_\_

Weight (if possible, kg or lbs): \_\_\_\_\_

Sex of marine mammal (if possible): \_\_\_\_\_

How was sex determined?: \_\_\_\_\_

Confidence of Species Identification:                      SURE                      UNSURE                      BEST GUESS

Description of Identification characteristics of marine mammal: \_\_\_\_\_

Genetic samples collected:                      YES / NO

Genetic samples transmitted to: \_\_\_\_\_ on \_\_\_\_/\_\_\_\_/20\_\_

Fate of marine mammal: \_\_\_\_\_

Description of Injuries Observed: \_\_\_\_\_

Other Remarks/Drawings: \_\_\_\_\_

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**APPENDIX B TO ADDENDUM "C"**

Lease Number OCS-A 0522

**REQUIRED DATA ELEMENTS FOR PROTECTED SPECIES OBSERVER REPORTS**

The Lessee must ensure that the PSO record all observations of protected species using standard marine mammal observer data collection protocols. The list of required data elements for these reports is provided below:

1. Vessel name;
2. PSOs' names and affiliations;
3. Date;
4. Time and latitude/longitude when daily visual survey began;
5. Time and latitude/longitude when daily visual survey ended; and
6. Average environmental conditions during visual surveys including:
  - a. Wind speed and direction;
  - b. Sea state (glassy, slight, choppy, rough, or Beaufort scale);
  - c. Swell (low, medium, high, or swell height in meters); and
  - d. Overall visibility (poor, moderate, good).
7. Species (or identification to lowest possible taxonomic level);
8. Certainty of identification (sure, most likely, best guess);
9. Total number of animals;
10. Number of juveniles;
11. Description (as many distinguishing features as possible of each individual seen, including length, shape, color and pattern, scars or marks, shape and size of dorsal fin, shape of head, and blow characteristics);
12. Direction of animal's travel relative to the vessel (preferably accompanied by a drawing);
13. Behavior (as explicit and detailed as possible, noting any observed changes in behavior);
14. Activity of vessel when sighting occurred.

## **Appendix C**

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**CONFIDENTIAL**

Geophysical, Geologic & Biological Survey Reports for Site Assessment Plan:

C-1 Site Assessment Plan Survey Summary Report

C-2 Geophysical Survey Operations Report

C-3 Geotechnical & Environmental Operations Report

**This Appendix has been redacted in its entirety.**

**Appendix D**

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CONFIDENTIAL  
Archaeological Report for Site Assessment Plan

**This Appendix has been redacted in its entirety.**

**Appendix E**

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Biological Survey Report for Site Assessment Plan

# ALPINE VINEYARD WIND

## Lease Area OCS-A 0522 Site Assessment Plan Sites Benthic Report

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Prepared by:

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Prepared for:

**Alpine Ocean – Vineyard Wind**

19-P-206028 Alpine Vineyard Wind  
Lease Area OCS-A 0522 SAP Sites  
Benthic Sampling Report V5

21 February 2020

[rpsgroup.com](http://rpsgroup.com)

PUBLIC

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# 1 INTRODUCTION

RPS was contracted by Alpine Ocean to collect, process, analyze, and compile benthic data from a towed video sled and grab sampler for two lease areas offshore of Martha's Vineyard, Massachusetts (OSC-A 0501 and OSC-A 0522) intended for the construction of offshore wind turbines. The grab samples and video imagery data conclusions presented here will support interpretation of geophysical data to characterize surficial sediment conditions and classify the benthic habitat in lease area OSC-A 0522 according to the Coastal and Marine Ecological Classifications Standards (CMECS; FGDC 2012) and recent guidance (draft National Marine Fisheries Service [NMFS] guidance 2020) for inclusion in the Site Assessment Plan (SAP) for Bureau of Ocean Energy Management (BOEM). Remaining samples from OSC-A 0501 South and OSC-A 0522 (522) will be summarized in a following report. This report provides:

- A description of the benthic grab sampling methods, results, and analyses;
- The analysis of benthic grab sampling results using key statistical analyses such as taxa richness, density per cubic meter, community composition, etc.;
- A description and analysis of the video data collected; and
- CMECS classifications of each sample site based on the video, grain size, and benthic community lab results.

## 2 METHODS

### 2.1 Field Survey

#### 2.1.1 Towed Camera Sled

Underwater video transects were taken in conjunction with grab samples for visual classification of the seafloor from mid-October to late-December 2019. The camera sled was equipped with an altimeter to record distance above sea floor, temperature probe, parallel-mounted lasers 7.5 centimeters (cm) apart, and a cable that transmitted real-time viewing of images to the vessel. The video sled was deployed from a side-oriented A-frame by the Alpine Ocean crew and lowered until positioned 0.5-1.5 meters (m) above the seafloor. Distance of camera to the seafloor varied along each transect due to differences in sediment type, vessel speed, swells, and low visibility/high turbidity.

Transects were recorded in accordance with procedures approved by Alpine and Vineyard Wind and following BOEM's Guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 (BOEM, 2019). Vessel speed was usually kept to 1 knot or lower and never exceeded 3 knots. Direction was given from the video operator to the winch operator to raise and lower the camera sled as needed to maintain proximity to the seafloor; however, a combination of difficult weather and vessel design created changes in deck height

relative to the seafloor which frequently pulled the video sled out of visible range of the seafloor. While recording, field notes were taken containing sample information (date, time, global positioning satellite [GPS] coordinates, station ID, depth, and video file name) and observations of sediment/seafloor characteristics of note to aid in post-processing of video data. Special notes were made for the beginning and end of the transect as well as any changes in weather or visibility conditions, sediment, or species. During video recording, attention was given to noting if potentially sensitive benthic habitats (e.g., exposed hard bottom, seagrass/kelp/algal beds, coral species) were present, as per BOEM's guidelines (BOEM, 2019).

### 2.1.2 Grab Sampling

Benthic grab samples were acquired using a Harmon/Day Grab Sampler owned by Alpine Ocean. The standard sampler has been modified to improve penetration and reduce sample disturbance, contamination, and washout during retrieval by the addition of weights, the use of stainless-steel sample doors and bucket, and an extended bucket lip. An ultra short baseline (USBL) beacon was fixed to the grab sampler to obtain GPS coordinates in conjunction with a pole-mounted USBL system. An attached camera was intended for use when determining sensitivity of benthic habitat but high turbidity/low visibility and rapid changes in grab sampler altitude due to weather and side deployment made it difficult to assess bottom type without contact.

Upon retrieval, the grab sampler was examined for sample acceptability. A sample was initially deemed acceptable only if the bucket was more than 50% full, the sample was not over penetrated (i.e., not full to the top), and sample surface structures were undisturbed and even (i.e., not slumped). However, due to the frequency of soft-bottom habitat comprised of mud and silt, RPS was authorized by onboard client representatives to accept over penetrated samples with disturbed surfaces (though discretion was used in cases of severely compromised samples).

If a sample did not fulfil these requirements, the contents were deposited into a clean bucket and another sample attempt was made. All subsequent failed samples were collected in the same bucket, contents mixed thoroughly, and core and sediment samples collected from the mixture to acquire the sample. If more than three failed sample attempts occurred at one station, sampling moved on to the next station (no more than three fails occurred in any one sampling station). The results of each attempted grab were recorded in field notes.

Once an acceptable sample was obtained, the following steps were taken:

1. A photograph was taken of the sample next to an identification label containing sample identification number.

2. Field notes included descriptions of physical features (depth of penetration, sediment color, texture, surface features) and surface macrofauna, which were then returned to the water (none present).
3. The grab sample was then divided into an “A” and backup “B” sample based on the bucket design which was accessed via two hinged doors divided by a central support bar. The “A” designation was assigned to the least disturbed side or arbitrarily when samples were of equal quality.
4. A four-inch diameter lexan tube was inserted and sediment cores were removed from each side of the grab sampler bucket and placed in sieving buckets.
5. A 100-mL sample was taken from the sediment surrounding the cores on both sides and placed in plastic bags for grain size analysis.

After collection, the “A” sample was then photographed and described more thoroughly (grain size and characteristics at depth) and both samples were then loaded onto a processing table and material washed through a 500- $\mu$ m sieve using seawater under gentle pressure.

Organisms, shell fragments, and other remaining material was placed into a plastic container using stainless steel forceps as needed. The container was filled no more than one-half to two-thirds full of sample and seawater. If the quantity of sample exceeded this volume, it was placed in a second container. The sample was fixed/preserved with 10% buffered formalin solution dyed with Rose Bengal by filling the remaining space within the bottle with solution. Containers were tightly sealed with tape and stored in a cooler at ambient temperature (not frozen or refrigerated). Prior to sieving the next sample, the sieve was cleaned by backwashing with pressurized water. The infaunal benthic community samples were sent to EcoAnalysts (Moscow, ID) for processing and the grain size samples were sent to TerraSense (Totowa, NJ).

## 2.2 Lab Analysis

### 2.2.1 Grain Size and TOC Analysis

Grain size samples were analyzed by TerraSense using ASTM D6913 and ASTM D7928 Standard Test Methods for Particle-size distribution of soils (ASTM, 2016a,b).

### 2.2.2 Benthic Infauna Analysis

The benthic infauna analysis was conducted by EcoAnalysts according to the following steps:

1. Benthic infaunal samples were catalogued and verified against the Chain of Custody to ensure samples received match those listed in the shipment.
2. Samples were rinsed with freshwater to remove the formalin and transferred to 70 percent ethanol alcohol for sorting and storage.

3. Organisms were identified to the lowest practical taxonomic level (LPTL) (at least to Family) and counted by taxonomists using the most appropriate taxonomic references for the region (Bousfield, 1973; Cutler, 1994; Winston and Hayward, 2012).
4. Species classification and abundance were recorded in project data sheets and summarized in both tabular and graphical formats.
5. Prior to performing the infaunal data analysis, the overall dataset was scanned for noninfaunal taxa (i.e., pelagic or planktonic organisms) that were excluded from all analyses; examples include chaetognaths, hyperiid amphipods, and decapod zoea/megalopae.
6. Calculations of abundance included all taxa occurring in each sample whether identified to species level or not.
7. Calculations based on species (diversity, evenness, and number of species) included only those taxa identified to species level.

## 2.3 Video Data Post-Processing

### 2.3.1 Objectives

Post-processing and analysis of video transect data was conducted by RPS to provide:

- General characterization of substrate including bottom type, texture, micro-topography, and presence and approximate thickness (absent, light, moderate, or heavy) of sedimentation (“drape”) covering hard substrates;
- Evidence of benthic activity by organisms (burrows, trails, biogenic reefs);
- Identification of epibenthic macroinvertebrates (decapod crustaceans, mollusks [including squid mops], echinoderms) and benthic habitat;
- Presence/evidence and general characterization of submerged aquatic vegetation (macroalgae, sea grass);
- Identification of fish and fish habitat (where feasible) as classified by Auster (1998) to provide back compatibility with prior sampling work in the region;
- Identification of organisms to the lowest practical taxonomic level (generally to Order to Family) using standard taxonomic keys for the geographic area;
- Evidence of fishing activity, such as trawl scars, pots, and working nets; and
- Presence of derelict fishing gear, military expended materials, shipwrecks, cultural artifacts, or other marine debris.

All still images from videos will be classified according to CMECS (FGDC, 2012); Auster (1998) classification is also included as it is indicative of overall habitat features that can be important to fish, while CMECS focuses more closely on grain size and composition. The BOEM Benthic Habitat Survey guidelines (BOEM, 2019) also require that the developer characterize the benthic community composition which

includes documentation of abundance, diversity, percent cover, and community structure. The following were recorded when present and identifiable:

- Characterization and delineation of any submerged aquatic vegetation (seagrass or macroalgae) that occurs within the area of potential adverse effect;
- Characterization and delineation of any hard-bottom gradients of low to high relief such as coral (heads/reefs), rock or clay outcroppings, or other shelter-forming features; and
- Identification of communities of sessile and slow-moving marine invertebrates (clams, quahogs, mussels, polychaete worms, anemones, sponges, echinoderms) that may be within the area of potential adverse effect.

### 2.3.2 Methods

The video data post-processing methods were developed based on relevant information presented in various peer-reviewed publications and technical guidelines, such as:

- “Northeast Atlantic Marine Biological Analytical Quality Control Scheme (NMBAQC) and Joint Nature Conservation Committee (JNCC): Epibiota remote monitoring from digital imagery: interpretation guidelines (Turner et al., 2016);
- “NMBAQC and JNCC: Epibiota remote monitoring from digital imagery: operational guidelines” (Hitchin et al., 2015).
- “Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects” (Judd, 2011);
- “Mapping European Seabed Habitats (MESH) Seafloor video mapping: collection, analysis, and interpretation of seafloor video footage for the purpose of habitat classification and mapping” (White et al., 2007);
- “Video analysis, experimental design, and database management of submersible-based habitat studies” (Tissot, 2008); and
- “Photographic evaluation of the impacts of bottom fishing on benthic epifauna” (Collie et al., 2000).

Videos were reviewed and analyzed in two separate steps. First, each video was reviewed in its entirety multiple times and any notable seafloor features or epifaunal/benthic/demersal species were recorded. When a feature or species was identified, the reviewer recorded the time, rated video visibility, categorized the bottom based on Auster (1998), and recorded the lowest possible taxon and abundance of organisms greater than ~4 cm in size (equal to roughly half the distance between the laser points). CMECS classification was applied to each individual still image during a later processing step using percent cover information. Most portions of the videos were reviewed multiple times using slower playback speeds and replay functions. After review, the taxonomic details of each macrofaunal observation were investigated and data were recorded at the lowest possible taxonomic level identifiable through the video.

Second, each video was subsampled to produce still images at 5-second intervals. Metadata were recorded for each still image including latitude and longitude, transect, and ID number. The quality of each image was assessed with a categorical scale from 0 to 4. Still images with quality scores of “moderate” (2 or greater) were analyzed with seabed image processing software photoQuad (Trygonis and Sini, 2012). Each image was calibrated using the reference laser points and the area of the visible portion was recorded. Poorly lighted or blurry edges of “passing” images were excluded from analysis.

The abundance of macrofauna was recorded along with presence/absence benthic biotic activity, submerged aquatic vegetation (macroalgae, sea grass), fishing activity, derelict gear, military expended materials, shipwrecks, coral heads/reefs, rock outcroppings, other shelter features, and other marine debris. A score for visibility, Auster (1998) fish habitat characterization and rugosity (i.e., seafloor roughness or habitat complexity based on visual estimation) were assigned for each image as a whole (see definitions in Table 2).

For CMECS classification, fifty points were distributed uniformly across the entire visible portion of each still image using photoQuad. Percent cover data were recorded as the number of points under which different substrate types or features were visible: boulder/cobble, pebble/granule, sand/mud, worm tubes, shell debris, mobile macrofauna, sessile macrofauna, algae, or encrusting organisms. These point counts were multiplied by two to approximate percent cover for the still image and used to assign the appropriate substrate classifications of the habitat to the furthest extent possible according to CMECS standards (FGSC, 2012). Biogenic modifiers were included based on the size and percent cover of the biogenic features (Table 1).

Table 1 CMECS biogenic modifier size and percent cover categories.






Biogenic Size	Definition	Biogenic Cover	Definition*
Reef	> 4,096 mm	Trace	< 1%
Rubble	64 – 4,096 mm	Sparse	1 – 30%
Hash	2 – 64 mm	Moderate	30 – 70%
Sand	< 2 mm	Dense	70 – 90%
		Complete	> 90%

\* Adapted from FGDC, 2012.



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Table 2 Still image data analysis categories for visibility, Auster sediment class, and rugosity.

Visibility Score	Visibility Definition	Auster Category	Auster Definition*	Rugosity Score	Rugosity Definition**
0 – none	obscured or turbid, lasers not visible on seafloor	1 – flat sand/mud	areas with no vertical structure	0 – none	
1 – low	some visibility but still blurry, lasers may or may not be visible	2 – sand waves	troughs and waves in sand	1 – low	
2 – moderate	some features distinguishable, both lasers in view	3 – biogenic structures	burrows, depressions, and other features created or used by mobile fauna for shelter	2 – moderate	
3 – high	most features distinguishable, both lasers in view	4 – shell aggregates	shells create complex interstitial spaces for shelter and high-contrast background	3 – high	
4 - excellent	all features clearly visible, both lasers in view	5 – pebble-cobble	small interstitial spaces, less ephemeral than shell	4 - extreme	
		6 – pebble-cobble with sponge cover	attached fauna increase spatial complexity		
		7 – partially buried or dispersed boulders	partially buried boulders provide high vertical relief while dispersed boulders over cobble provide simple crevices		
		8 – piled boulders	provide deep interstitial spaces of variable sizes		

\*Adapted from Auster, 1998.

\*\* Adapted from Turner et al., 2016.

## 2.4 Benthic Infaunal Data Post-Processing

The benthic infaunal community analysis was based on the laboratory results provided by Ecoanalysts for the three successful grab samples at SAP sites in the 522 lease area. Infaunal community statistics were calculated using species and abundance estimates in each sample, which were reported as count per 0.008 m<sup>2</sup> (area of subsample corer). Community composition parameters included: total abundance, number of phyla, number of taxa, Margalef's Richness Index, Shannon Diversity Index, and Pielou's Index of Evenness for each station and within each lease area.

### 2.4.1 Taxonomic Composition

Taxa composition was assessed to characterize the high-level trends in taxa data. Taxa composition includes the relative proportions of taxonomic groups by number of identifiable taxa and number of individuals, used to evaluate dominance of common phyla across all samples. Taxa composition was summarized for individual samples.

### 2.4.2 Richness, Diversity, and Evenness

Species richness, evenness, and diversity are common ecological parameters used to measure the overall biodiversity of a community or discrete unit. Species richness is the number of unique species or taxonomic groups represented in an area of interest. In this assessment, species richness was calculated using Margalef's Richness Index (Formula 1) for each station and lease area to acquire individual and average richness indices.

*Formula 1. Margalef's Richness Index (RI).*

$$RI = \frac{(S - 1)}{\ln(n)}$$

*Where:*

*S= the number of species*

*n= the total number of individuals in the sample*

*Interpretation: The higher the index, the greater the species richness.*

The diversity index for a community considers species richness and the proportion of each unique species. The Shannon Diversity Index (H'; Formula 2) was calculated using the number of each species, the proportion of each species relative to the total number of individuals, and the sum of the proportions. This index was used to assess diversity of each station and lease area. The diversity index (H') increases with increasing species richness and evenness.

*Formula 2. H'- Shannon Diversity Index.*

$$H' = - \sum_{i=1}^R p_i \ln(p_i)$$

*Where:*

*p<sub>i</sub> = the proportion of individuals belonging to the species in the dataset of interest*

*Interpretation: The greater the H', the greater the richness and evenness.*

Evenness of a community refers to the similarity in abundances of different species comprising a population or sample. Pielou's Index of Evenness includes  $H'$  (Shannon-Weiner Diversity Index) in its calculation.

Formula 2.  $J'$ - Pielou's Index of Evenness.

$$J' = \frac{H'}{H_{Max}}$$

Where:

$H'$  = the Shannon- Weiner Diversity Index

$H_{Max}$  = the maximum possible value of  $H'$ , where each species occurs in equal abundances.

$$H_{Max} = \ln(s)$$

Where:  $s$  = Number of species

Interpretation:  $J'$  is constrained between 0 and 1. The greater the value of  $J'$ , the more evenness in the sample.

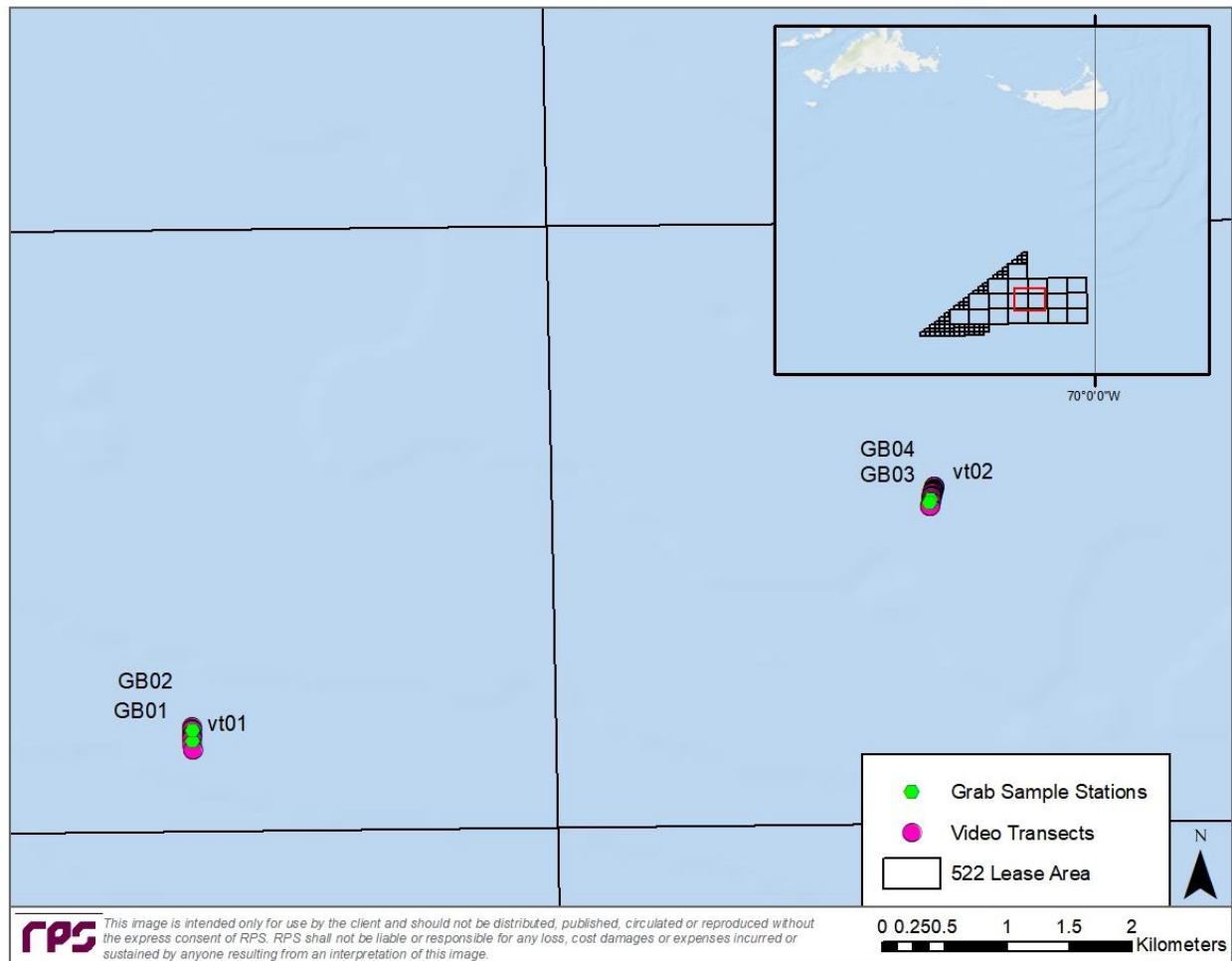
### 3 RESULTS

#### 3.1 Video Analysis

The characteristics and locations of the two priority SAP underwater video transects within the 522 lease area are described in Table 3 and Figure 1. Note that transects collected near the beginning of the survey effort used a fiberglass tow sled frame that did not perform well under rough sea conditions; thus, the same camera was transferred to a heavier metal tow sled frame that provided more stability to the tow system for the remaining transects.

Table 3 Underwater video transect locations and characteristics.

Transect	Date	Recorded Duration (min:sec)	Start/End Latitude	Start/End Longitude	Equipment	Total # Stills	# Analyzed Stills
VT01	11/3/2019	12:21	40.673915 40.671418	-70.218842 -70.218723	TS-500; fiberglass tow sled frame	138	15
VT02	11/14/2019	10:42	40.690992 40.689175	-70.165337 -70.157590	TS-500; metal tow sled frame	118	34



**Figure 1 Map of 522 lease area SAP underwater video transects VT01 and VT02 (pink circles) and grab sample stations GB01, GB02, GB03, and GB04 (green octagons).**

### 3.1.1 Macrofauna Counts

The presence and abundance of macrofauna > 4 cm were recorded during the video review process. Organisms were identified to the LPTL, usually Order or Family. Fifteen organisms were enumerated in the VT01 and VT02 video transects with over 66% of counts comprised of *Cancer spp.* crabs and Rajidae skates (Table 4 and Figure 2). See below for representative images from VT01 showing a skate (Figure 3) and VT02 showing a *Cancer spp.* crab (Figure 4).

VINEYARD WIND LEASE AREA OCS-A 0522 SAP SITES BENTHIC REPORT

Table 4 Macrofauna enumerated during review of the two video transects.

Lowest Taxonomic Grouping	Common Name	Counts per Transect	
		VT01	VT02
<i>Cancer spp.</i>	Cancer crab	1	6
<i>Euspira spp.</i>	Moon snail		1
<i>Euspira spp.</i> - egg case	Moon snail egg case	2	
Rajidae	Skate	2	1
Rajidae - egg case	Skate egg case	1	
<i>Pagurus spp.</i>	Hermit crab	1	
<b>Totals</b>		<b>7</b>	<b>8</b>

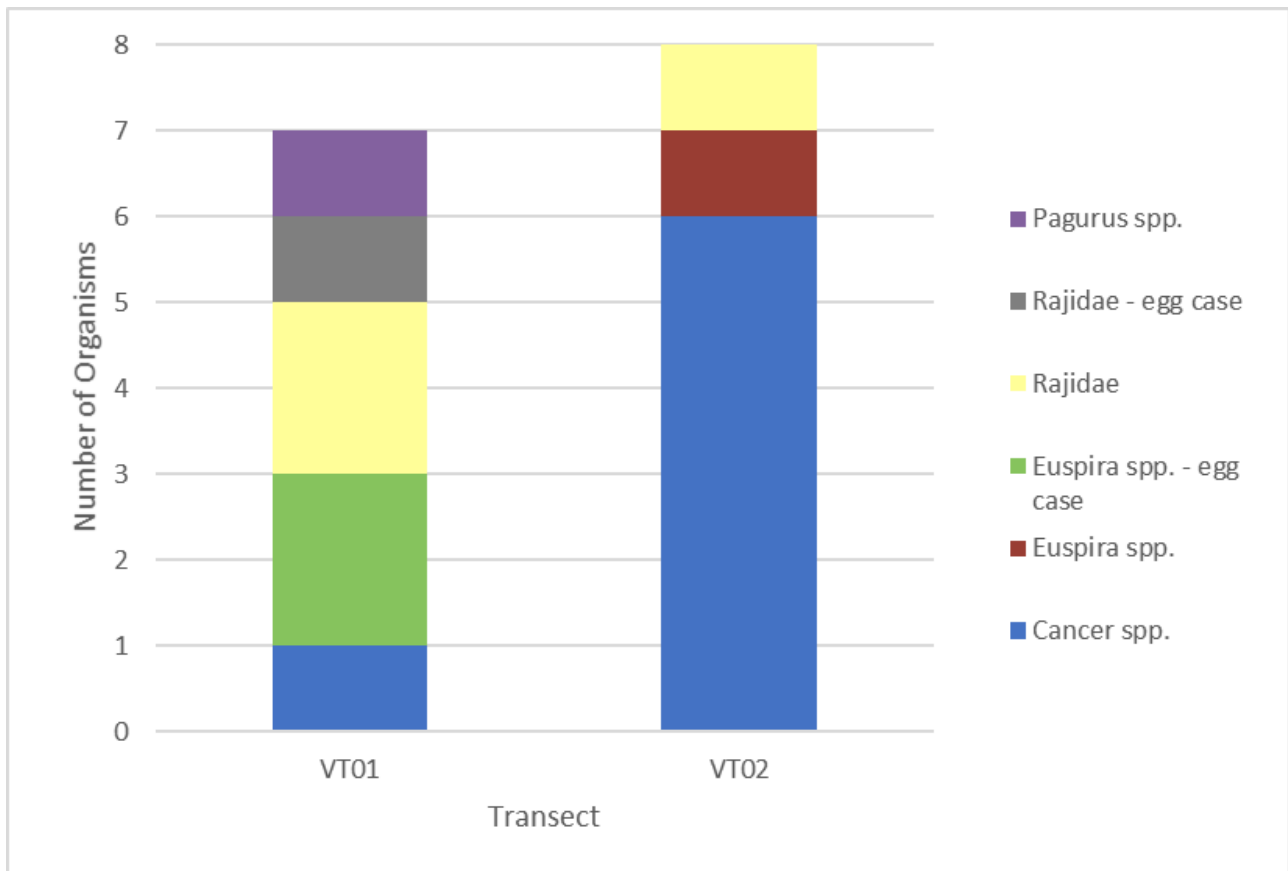


Figure 2 Counts of macrofauna enumerated during video review for each transect, identified to lowest practical level.



Figure 3 Representative screenshot from VT01 showing a skate swimming quickly across the top of the frame.



Figure 4 Representative screenshot from VT02 showing a *Cancer sp.* crab, below and to the right of lasers.

### 3.1.2 Percent Cover

The following sections summarize the percent cover data obtained from still images taken throughout the underwater video transects. CMECS substrate categories were combined to the level detectable via visual analysis; finer resolution classification into different subgroups requires grain size analysis of samples overlapping the video transect directly. For these percent cover estimates, our grain size categories were sand/mud, pebble/granule, and boulder/cobble. Biogenic categories of percent cover were worm substrate and shell substrate. We also included a percent cover category for evidence of crab or amphipod burrows, which would fall under the burrows/bioturbation geoform group within the biogenic origin category.

In total, 49 of 256 stills from VT01 and VT02 were analyzed (Table 5, Figure 5, Figure 6). Coverage was dominated by the combined CMECS substrate group component sand/mud. Aquatic vegetation, evidence of fishing activity, encrusting or colonial organisms, and anthropogenic debris were not observed in any of the still images.

Table 5 Total area, mean rugosity, and mean percent cover summarizing point count data for the two video transects.

Transect ID	Total Area Analyzed (m <sup>2</sup> )	Mean Rugosity	boulder/cobble (%)	pebble/granule (%)	sand/mud (%)	worm (%)	burrow (%)	shell (%)
VT01	2.3	0	0	0	97.2	2.6	0	0.2
VT02	13.4	0.26	0	0	78.4	0	0	21.6

Percent cover in VT01 primarily consisted of sand/mud with no evident macrofauna (Figure 5). A few stills captured small worm tubes (2.6% coverage) and one still was classified as shell rubble. Since the worm tubes were not cemented or conglomerated together, nor did they dominate any of the imagery, they were not considered a major biogenic substrate type used in classification.

VT02 consisted of sand/mud with varying amounts of shell rubble or hash and no evident macrofauna. A total of 8 still images from VT02 contained > 60% cover of moderate to dense shell pieces. These stills could be classified as biogenic shell rubble (> 64 mm in size) with geologic sand substrate as a co-occurring element (Figure 6 shows shell rubble from ocean quahog). However, when taken across the transect as a whole, VT02 had just 21.6% of the still image area analyzed over the entire transect composed of shell rubble and the dominant substrate group of the remainder of the transect was sand. Parallel-mounted lasers in representative images are 7.5 cm apart.



Figure 5 Representative still image of video transect data from VT01: sand/mud with no evident macrofauna.

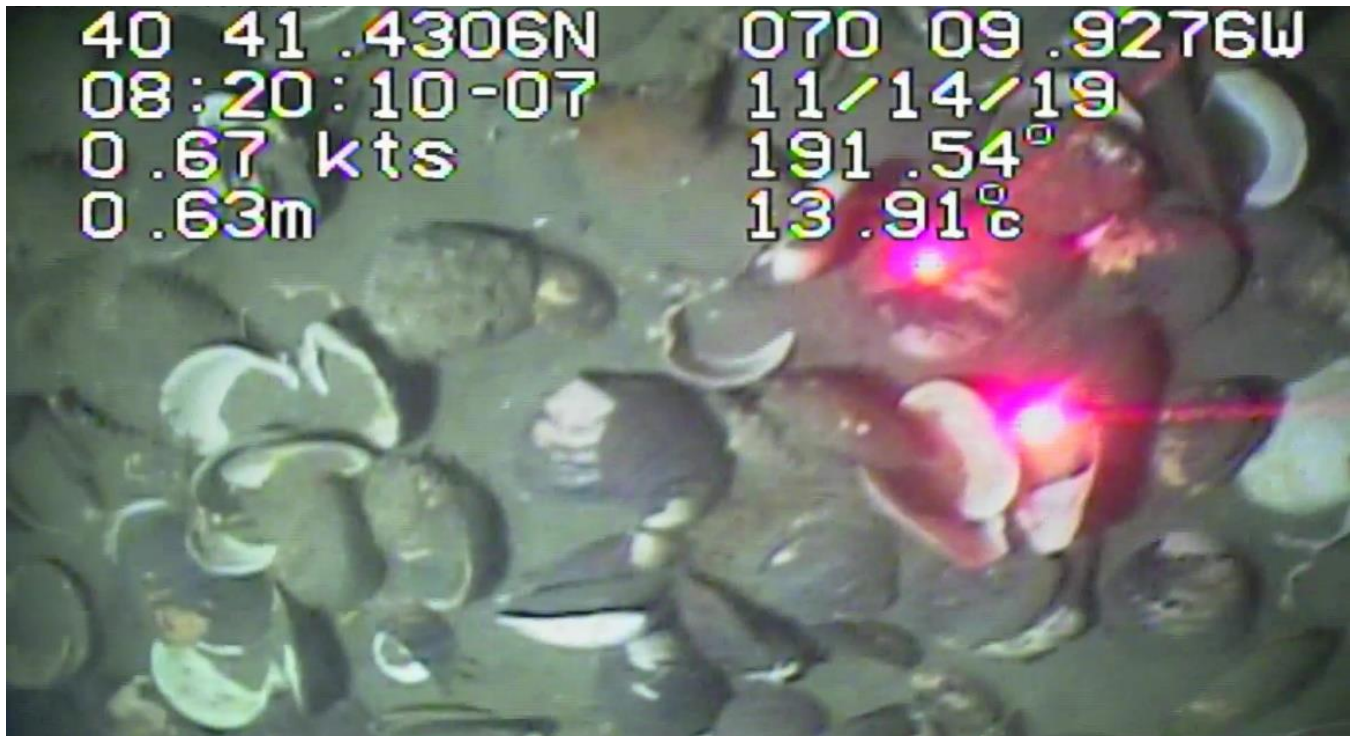


Figure 6 Representative still image of video transect data from VT02: ocean quahog shell rubble.



Auster classifications were also made of each still image for back-compatibility with prior habitat work. All of VT01 was classified as flat sand/mud while VT02 contained a mix of flat sand/mud, sand waves, and shell habitat (Figure 7).

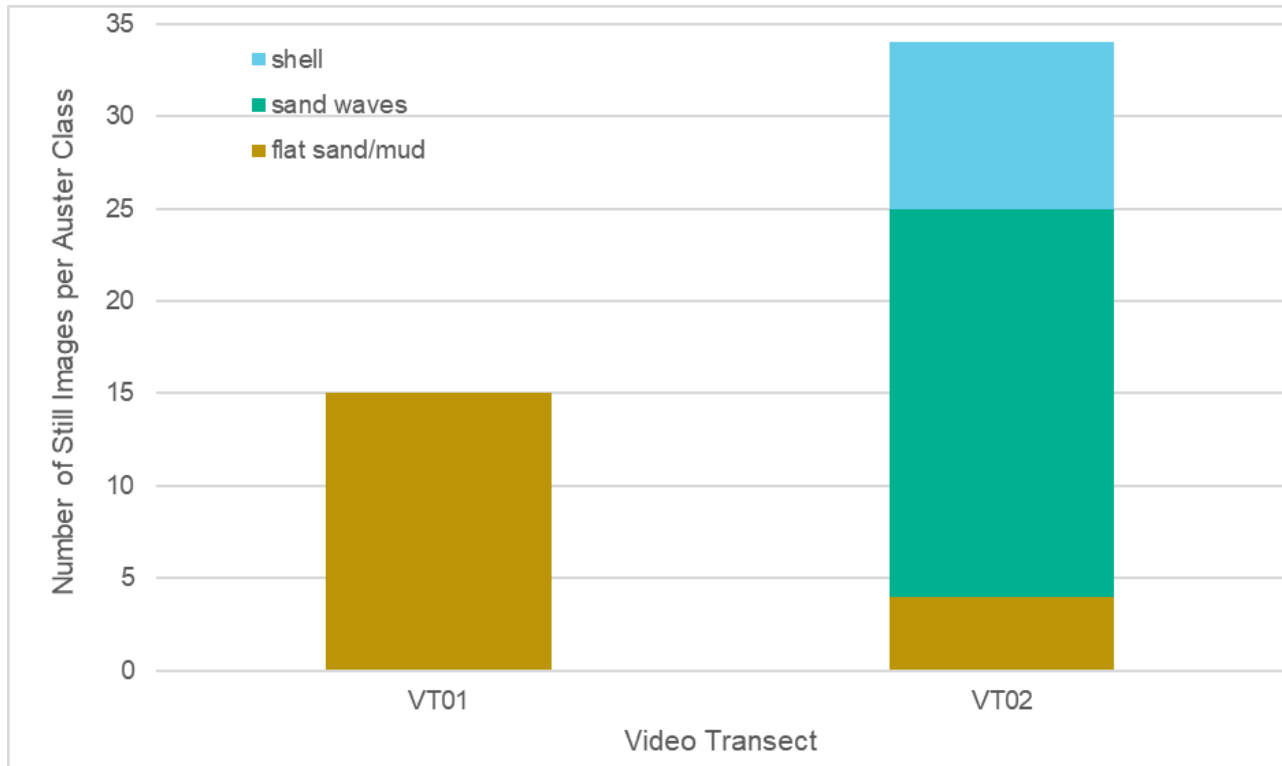


Figure 7 Number of still images assigned to different Auster classifications for each video transect.

### 3.2 Grab Samples

The characteristics and locations of the four priority SAP sample stations within the 522 lease area are described in Table 3 and shown in Figure 1. Three grab attempts were made at GB03, however, the sampler did not recover any sediment due to the presence of large clam rubble on the surface.

Table 6 Grab sample station locations and characteristics.

Station	Time (EST)	Latitude	Longitude	Water Depth (m)	Penetration Depth (cm)
GB01	7:29	40.672548	-70.218815	50	13
GB02	7:45	40.673305	-70.218841	49.9	14
GB03	9:11	40.689899	-70.165626	46.5	n/a
GB04	8:44	40.689727	-70.165659	45.8	5

### 3.2.1 Sediment Analysis

The following section presents grab sample grain size composition results from the TerraSense lab analysis. Samples from the three 522 lease area SAP grab sample stations were generally sandy comprising 82 – 94% fine sand (Table 7 and Figure 8). No gravel-sized grain components were reported in GB01 or GB02 with only 0.1% of smaller sized gravel (2 – 4.75 mm) found in GB04. GB01 contained both the greatest percentage of fines (silt and clay, 17.5%) as well as the highest moisture content (60%). There is no data for GB03 because that was the failed grab sample site.

Table 7 Grain size composition, percent finer than, and sample moisture content from grab samples.

Sample	% Gravel (> 4.75 mm)	% Coarse Sand* (2 – 4.75 mm)	% Medium Sand (0.41 – 2 mm)	% Fine Sand (0.075 – 0.41 mm)	Silt & Clay (< 0.075 mm)	% Moisture Content
GB01	0.0	0.0	0.3	82.2	17.5	59.8
GB02	0.0	0.0	1.3	85.5	13.2	42.8
GB04	0.0	0.1	0.4	93.5	6.0	35.3

\* Note that this sieve size category falls under “gravel” according to CMECS guidelines.

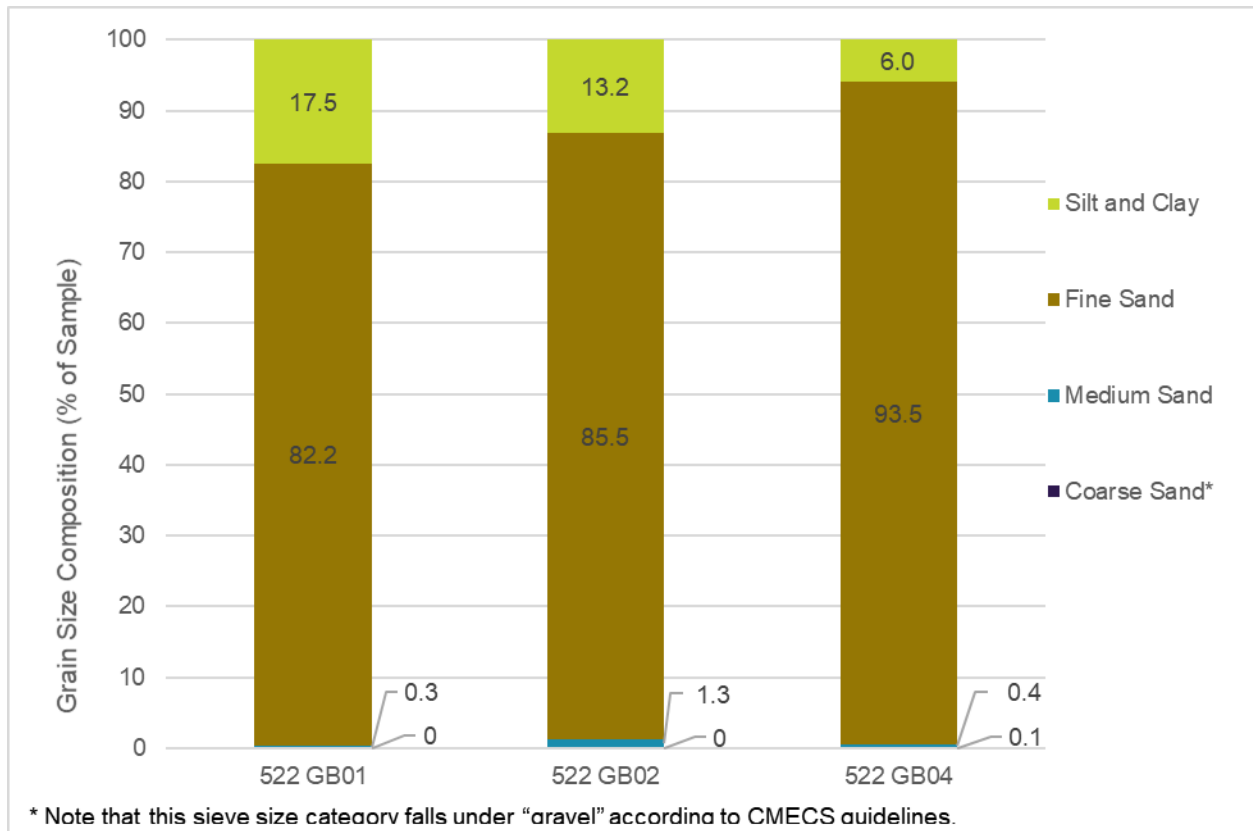


Figure 8 Grain size composition at each SAP grab station.

### 3.2.2 Benthic Community Analysis

#### 3.2.2.1 Taxonomic Composition

Successful grab samples were collected from three of the four SAP grab sample sites, including GB01, GB02, and GB04. Three attempts were made at GB03; however, none contained any sediment due to the presence of large clam rubble. Due to the lack of sediment in these samples, no sediment or infaunal samples were sent to the labs. Three grab sample attempts were made at GB04, all of which failed due to partial closure of the sampler bucket. Although the third and final attempt at sampling was considered a failure, enough undisturbed sediment remained in one half of the sampler and therefore one infaunal sample was collected from the sample. The second infaunal sample was collected from a mixture of the three failed attempts.

The three benthic grab samples collected at the SAP sites yielded a total of 616 individual macrofaunal organisms from 5 unique phyla and 28 families (or LPTL; Table 8). The phyla Annelida, Arthropoda, and Mollusca dominated the samples in both abundance and unique number of taxa (i.e., taxa richness), representing 98% of all organisms and 93% of all unique taxa (Figure 9).

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Table 8 Phyla present in the three benthic grab samples.

Phyla	Abundant Taxonomic Groups (common names)	Abundance (# per 0.008m <sup>2</sup> )	Number of Taxa
Annelida	Polychaete worms (segmented and bamboo worms)	131	12
Arthropoda	Amphipods	335	9
Mollusca	Nut clams	144	5
Nematoda	Nematodes	5	1
Nemertea	Ribbon worms	1	1
<b>Totals</b>		<b>616</b>	<b>28</b>

Abundance across the three benthic grab sites ranged from 127 organisms in GB04, the northeasterly site, to 295 in GB02, the southwesterly site. Mean abundance was 205 organisms per station, averaged across the three samples (Table 9). The percent composition of each sample by phyla is shown in Figure 10.

Table 9 Abundance of each Phylum counted within each grab sample.

Station	Annelida	Arthropoda	Mollusca	Nematoda	Nemertea	Total Abundance
GB01	53	129	11	1	-	194
GB02	74	192	24	4	1	295
GB04	4	14	109	-	-	127
<b>Totals</b>	<b>131</b>	<b>335</b>	<b>144</b>	<b>5</b>	<b>1</b>	<b>616</b>

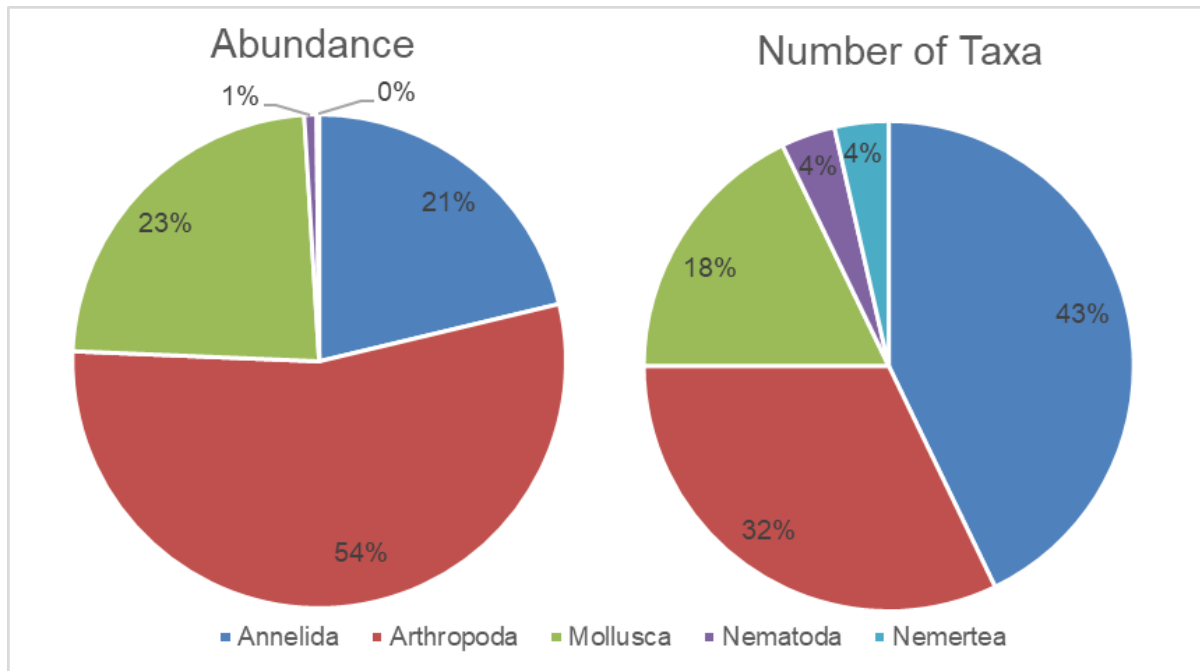
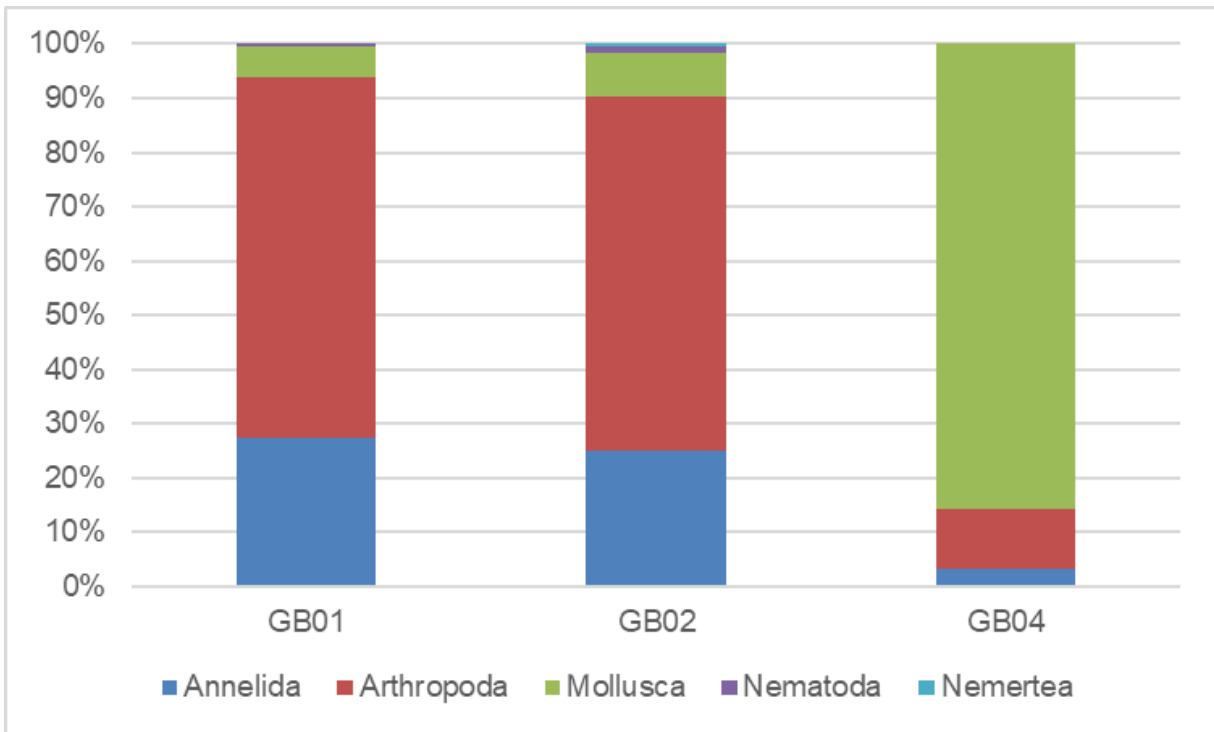


Figure 9 Abundance and number of unique taxa (Family or LPTL) for each phylum collected in all benthic grab samples. Results presented in percentage of total.



**Figure 10 Percent composition of organisms in each represented phylum for the three benthic grab sample stations (GB01, GB02, and GB04).**

### 3.2.2.2 GB01

Organisms collected in GB01 belonged to 4 phyla and 17 different Families or LPTL (Table 10) which primarily consisted of amphipods and polychaete worms. Amphipods from the Ampeliscidae family were most numerous, while organisms from the Annelida phylum were most diverse with 9 unique families or LPTL identified in the single sample. In the taxa tables presented here, taxa were listed on the same line if they each had the same abundance value to save space. For example, there were 2 individuals counted for each of Nephytidae and Syllidae families in the Annelida phyla (see line 4 in Table 10 below). Abundance was also summarized by phylum.

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Table 10 Total abundance of each phyla and taxa (family or LPTL).

Phyla	Taxa	Abundance (# / 0.008 m <sup>2</sup> )
<b>Annelida</b>	Paraonidae	24
	Maldanidae	14
	Lumbrineridae	7
	Nephtyidae, Syllidae	2
	Ampharetidae, Glyceridae, Oligochaeta (LPTI), Sabellidae	1
Total Annelida		53
<b>Arthropoda</b>	Ampeliscidae	118
	Leuconidae	7
	Phoxocephalidae, Unciolidae	2
Total Arthropoda		129
<b>Mollusca</b>	Mactridae	2
	Nuculidae	8
	Thyasiridae	1
Total Mollusca		11
<b>Nematoda</b>	Nematoda (LPTI)	1
Total Nematoda		1
<b>Total Abundance at GB01</b>		<b>194</b>

### 3.2.2.3 GB02

Organisms collected in GB02 belonged to 5 phyla and 20 different Families or LPTL (Table 11). Ampeliscidae amphipods (Arthropoda) dominated the sample at GB02 based on abundance.

Table 11 Total abundance of each phyla and taxa (family or LPTL).

Phyla	Taxa	Abundance (# / 0.008 m <sup>2</sup> )
<b>Annelida</b>	Paraonidae	36
	Lumbrineridae	13
	Oligochaeta (LPTI)	10
	Maldanidae	8
	Nephtyidae, Syllidae	2
	Ampharetidae, Opheliidae, Polygordiidae	1
<b>Total Annelida</b>		<b>74</b>
<b>Arthropoda</b>	Ampeliscidae	165
	Phoxocephalidae	12
	Leuconidae	6
	Ischyroceridae	4
	Corophiidae	3
	Unciolidae	2
<b>Total Arthropoda</b>		<b>165</b>
<b>Mollusca</b>	Nuculidae	13
	Lucinidae	10
	Mactridae	1
<b>Total Mollusca</b>		<b>24</b>
<b>Nematoda</b>	Nematoda (LPTI)	4
		4
<b>Nemertea</b>	Emplectonematidae	1
<b>Total Nemertea</b>		<b>1</b>
<b>Total Abundance at GB02</b>		<b>295</b>

### 3.2.2.4 GB03

While GB03 grab attempts did not recover any sediment due to the veneer of concentrated shell material and thus did not have an infaunal sample analyzed, crabs were noted amongst the shell debris when the sample was collected.

### 3.2.2.5 GB04

Organisms collected in GB04 belonged to 3 phyla and 10 different Families or LPTL (Table 12). Taxa dominating the sample collected at GB04 included nut clams from the Nuculidae family (Mollusca).

Table 12 Total abundance of each phyla and taxa (family or LPTL).

Phyla	Family or LPTI	Abundance (# / 0.008 m <sup>2</sup> )
Annelida	Sigalionidae	2
	Oligochaeta (LPTI), Polygordiidae	1
Total Annelida		4
Arthropoda	Ampeliscidae	7
	Ostracoda (LPTI)	4
	Diastylidae, Phoxocephalidae, Tryphosidae	1
Total Arthropoda		14
Mollusca	Nuculidae	108
	Nassariidae	1
Total Mollusca		109
<b>Total Abundance at GB04</b>		<b>127</b>

### 3.2.3 Richness, Diversity, and Evenness

Taxonomic richness across the three grab samples collected in the 522 lease area was 4.20, which was higher than the index score for each individual grab sample (Table 13). The richness of organisms collected in each of the benthic grab samples was 3.04 in GB01, 3.34 in GB02, and 1.86 in GB04. The sample collected at GB04 had the lowest richness, diversity, and evenness values as 86% of organisms in the sample came from a single family, Nuculidae (nut clams).

The ecological indices were relatively similar between nearby sample sites GB01 and GB02 as the distributions of organisms were similar, with the majority of organisms belonging to the Arthropoda (66% and 65% of organisms in GB01 and GB02, respectively) and Annelida (27% and 25% of organisms in GB01 and GB02, respectively) phyla. GB04, located eastward and farther away from GB01 and GB02, had ecological indices and infaunal community composition that differed noticeably from the other two sites.

Table 13 Community composition parameters calculated for each grab sample station.

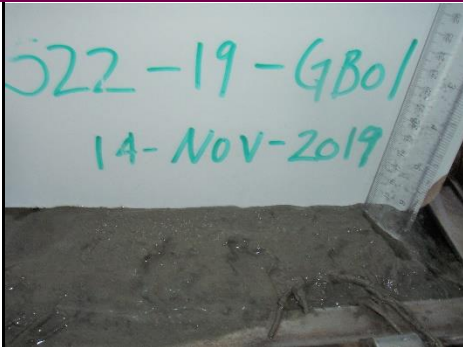


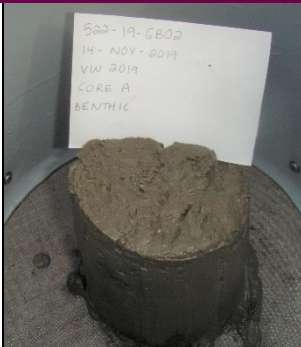


Station	Abundance (# of individuals per 0.008 m <sup>2</sup> )	# of Taxa	Ecological Indices		
			Richness	Diversity	Evenness
GB01	194	17	3.04	1.52	0.54
GB02	295	20	3.34	1.75	0.59
GB04	127	10	1.86	0.70	0.30
Totals	616	28	4.20	1.85	0.55



## 4 CMECS CLASSIFICATIONS

We assigned CMECS classifications to each grab sample station based on visual inspection of the sample on board the ship, as well as laboratory analysis of grain size and infaunal communities. We also assigned a CMECS substrate classification to each still image from the underwater video transects that were analyzed for percent cover. Table 14 shows the images of each grab sample and core after retrieval along with the CMECS classifications.

Table 14 Images of grab and subsequent core samples prior to processing, along with CMECS classifications.

Station	Grab Sampler	Core Sample
GB01	 <p>Muddy Sand &amp; Trace Worm Hash</p>	 <p>Muddy Sand &amp; Trace Worm Hash</p>
GB02	 <p>Muddy Sand with Sparse Worm Hash and Amphipod Bed</p>	 <p>Muddy Sand with Sparse Worm Hash and Amphipod Bed</p>
GB03*	 <p>(A) Clam Rubble Substrate</p>	 <p>(B) Clam Rubble Substrate</p>

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Station	Grab Sampler	Core Sample
GB04		
	Fine/Very Fine Sand	Fine/Very Fine Sand

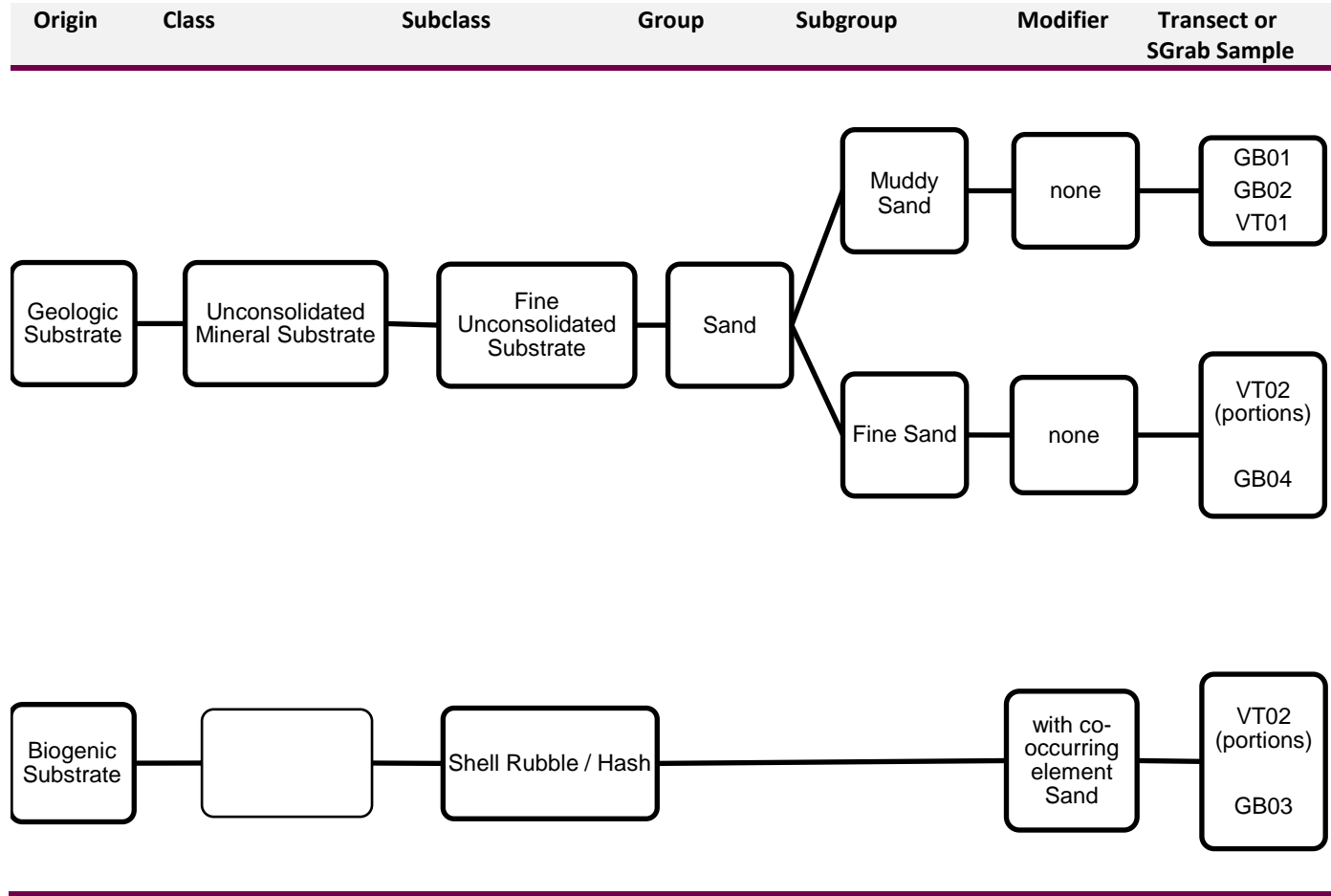
\* Note: Images for GB03 represent the two of the three failed grab attempts.

Substrate classification results are presented as a hierarchy in Table 15 for both grab and video samples. Grab samples from the two sites nearest each other to the west (GB01 and GB02) were both classified as muddy sand (no gravel, ~ 85% fine sand, ~15% silt/clay). The video survey nearest these grab sites, VT01, was also classified as sand/mud from the imagery and can be assumed to have similar silt/clay components as the grab samples, classifying it in the muddy sand subgroup.

Grabs at GB03 did not recover sediment because of the large amount of shell rubble present; this was classified as biogenic shell rubble with co-occurring sand. This sample is in the same vicinity of VT02, portions of which were also classified as biogenic shell rubble during the video review. GB04, which is near both GB03 and VT02, was classified as fine sand which is indicative of the pattern observed in the field of sandy crests with shell rubble collected in troughs in between.

Maps displaying the location and CMECS classification of each individual still image analyzed for the video transects are provided below (Figure 11 and Figure 12).

Table 15 CMECS hierarchical classification of substrates collected at each grab sample or video transect.



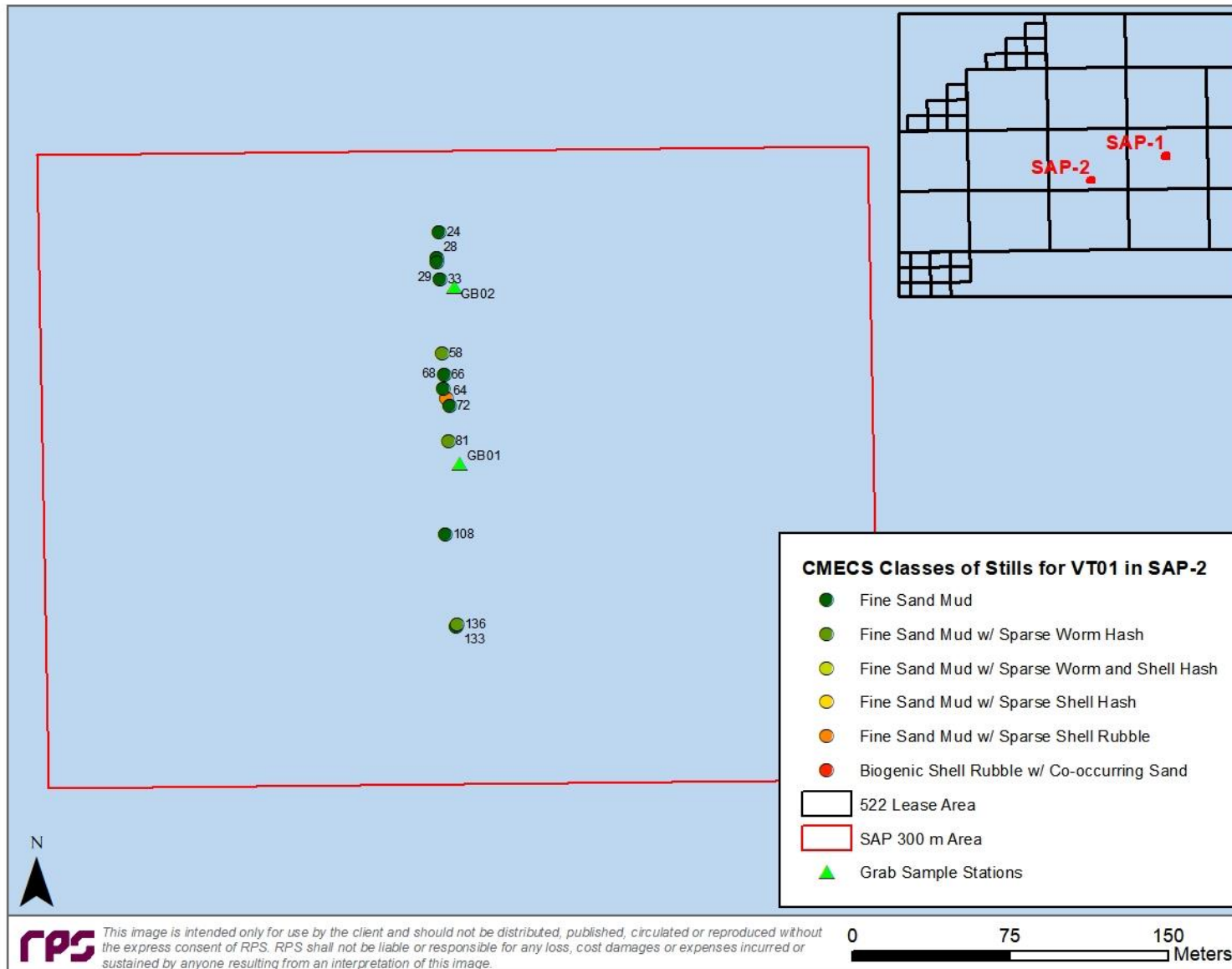


Figure 11 CMECS substrate classification for all viable still images in VT01 (numbers indicate still image ID).

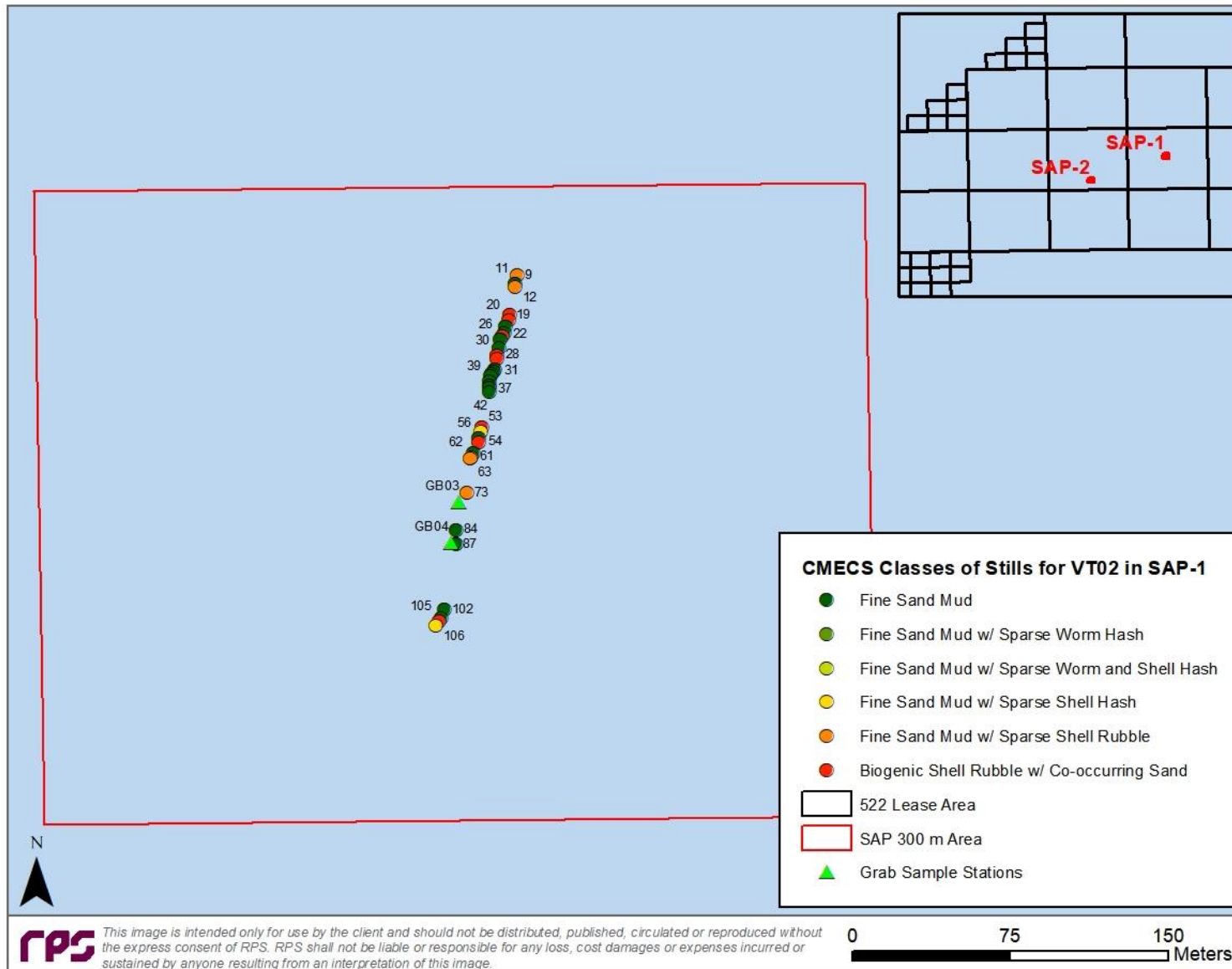


Figure 12 CMECS substrate classification for all viable still images in VT02 (numbers indicate still image ID).

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**Attachment To:**

**Section 11 - Engineering and Technology**

**ATTACHMENT 11-1**

**REDACTED**

**Attachment To:**

**Section 11 - Engineering and Technology**

**ATTACHMENT 11-2**

**REDACTED**



**Attachment To:**

**Section 13 - Construction and Logistics**

**ATTACHMENT 13-1**

**REDACTED**

**Attachment To:**

**Section 13 - Construction and Logistics**

**ATTACHMENT 13-2**

**REDACTED**



**Attachment To:**

**Section 14 - Fisheries Mitigation Plan**

**ATTACHMENT 14-1**

**FISHERIES COMMUNICATION PLANS**

Vineyard Northeast/Lease Area OCS-A 0522

# Fisheries Communications Plan

Vineyard Offshore

<b>Document Title:</b>	<b>Fisheries Communications Plan</b>
Company	Vineyard Offshore
Date:	December 2022
Document Type:	Plan
Revision:	2
Previous versions:	

Vineyard Northeast/Lease Area OCS-A 0522

## Fisheries Communication Plan

### I. Introduction

Vineyard Offshore is an offshore wind development company established by the same team that developed Vineyard Wind 1 (Lease Area OCS-A 0501), the nation's first commercial-scale offshore wind project. Vineyard Offshore leads the development of two lease areas along the US East Coast - Lease Area OCS-A 0522 (also known as Vineyard Northeast) and Lease Area OCS-A 0544 (also known as Vineyard Mid-Atlantic).

The Fisheries Communication Plan (FCP) is a living document based on best practice guidance and input from fishermen and fisheries stakeholders. It outlines our proactive approach to fisheries communication to ensure effective and regular engagement with a wide range of fishermen and fisheries stakeholders. This FCP aligns with the Vineyard Wind 1 FCP, which was first drafted in 2011 to improve communication with fishermen potentially affected by the development of that offshore wind project. Since then, our communications plan and approach has evolved and grown with over ten years of input from fisheries stakeholders. This document will be updated regularly, in response to stakeholder feedback and to incorporate lessons learned, to ensure communication protocols and tools remain relevant and effective.

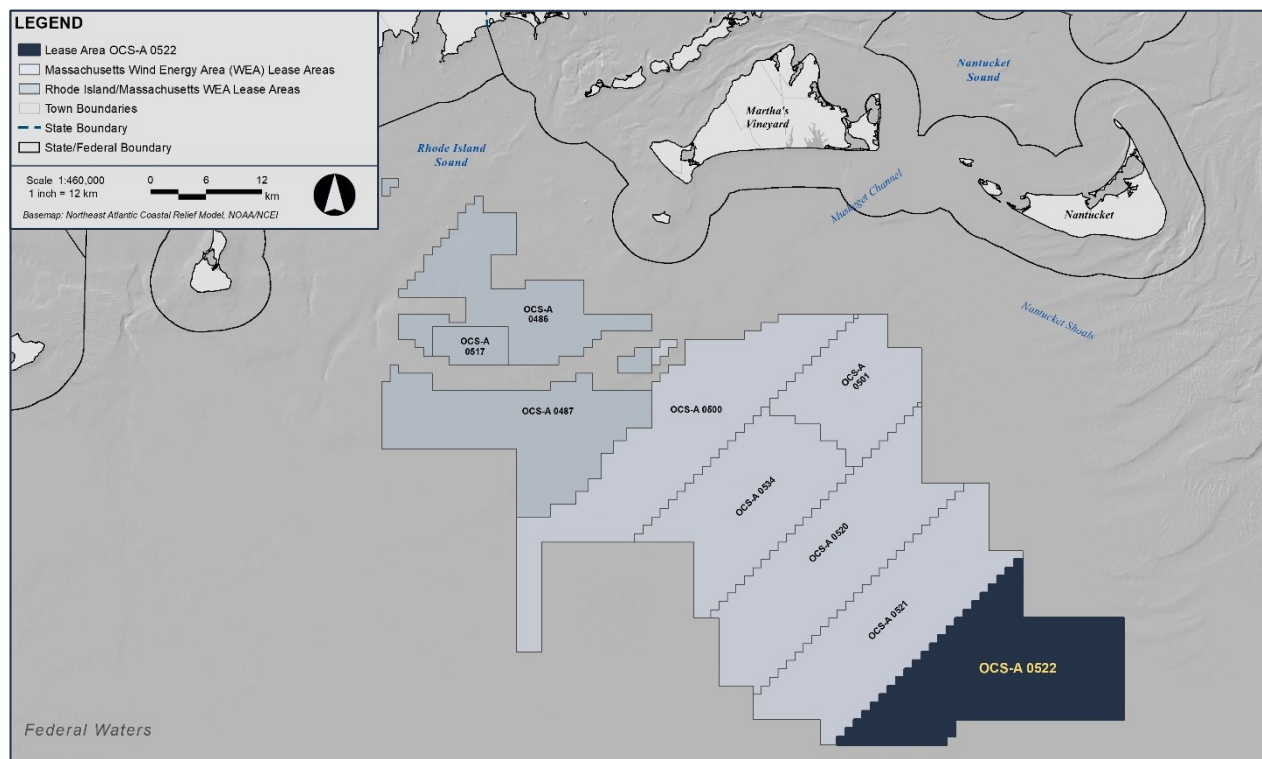
Vineyard Offshore strongly believes that the offshore wind and fishing industries can successfully co-exist in the marine environment, and we will continue the work started with Vineyard Wind 1 to build bridges between the two sectors. We will also continue to fund research, share data, participate in regional science initiatives, and expand our prior efforts to use fishermen and/or fishing vessels to support offshore site assessment and data gathering activities.

Visit <https://www.vineyardoffshore.com/fishermen> to sign-up for updates, Notices to Mariners, and information requests as well as to access charts, frequently asked questions (FAQs), and our fisheries science reports.

### II. Vineyard Northeast

Vineyard Offshore is developing Lease Area OCS-A 0522, as Vineyard Northeast, for wind energy production on the Outer Continental Shelf (OCS). The Lease Area is approximately 132,370 acres in size and is located approximately 25 nautical miles from Nantucket (see Figure 1). The Lease Area abuts Mayflower Wind's Lease Area OCS-A 0521 along its northwestern edge and has water depths between 105 - 210 feet (17.5 - 35 fathoms).

**Figure 1 Vineyard Northeast Lease Area OCS-A 0522**



### III. Potentially Affected Fisheries

An analysis published by the National Oceanic and Atmospheric Administration (NOAA) in 2021 indicates that the commercial fisheries likely to be most affected<sup>1</sup> by offshore site assessment, construction, and operations activities for Vineyard Northeast are: (1) Jonah Crab; (2) American Lobster; (3) All Others;<sup>2</sup> (4) Summer Flounder, Scup, Black Sea Bass; and (5) Mackerel, Squid, and Butterfish.<sup>3</sup> Other FMPs and fisheries may also be affected. Vineyard Offshore will conduct fisheries outreach and engagement to verify and refine NOAA's assessment of potential impacted commercial and recreational fisheries in Lease Area OCS-A 0522 as well as along any offshore export cable corridors.

### IV. Fisheries Team

Our fisheries communication efforts are led by Fisheries Manager (FM) Crista Bank, a fisheries biologist with deep knowledge of fishing practices as well as an extensive network of personal relationships with fishermen and fishery organizations in the region (see Figure 2). Crista

<sup>1</sup> NOAA defines "most impacted" as the Fisheries Management Plans (FMPs) deriving the most revenue from an area over the 12-year analysis period of 2008 to 2019, indicating the highest potential for impact to the industry from a reduction in fishing area.

<sup>2</sup> The category "All Others" refers to species with less than three permits or dealers impacted to protect data confidentiality.

<sup>3</sup> See:

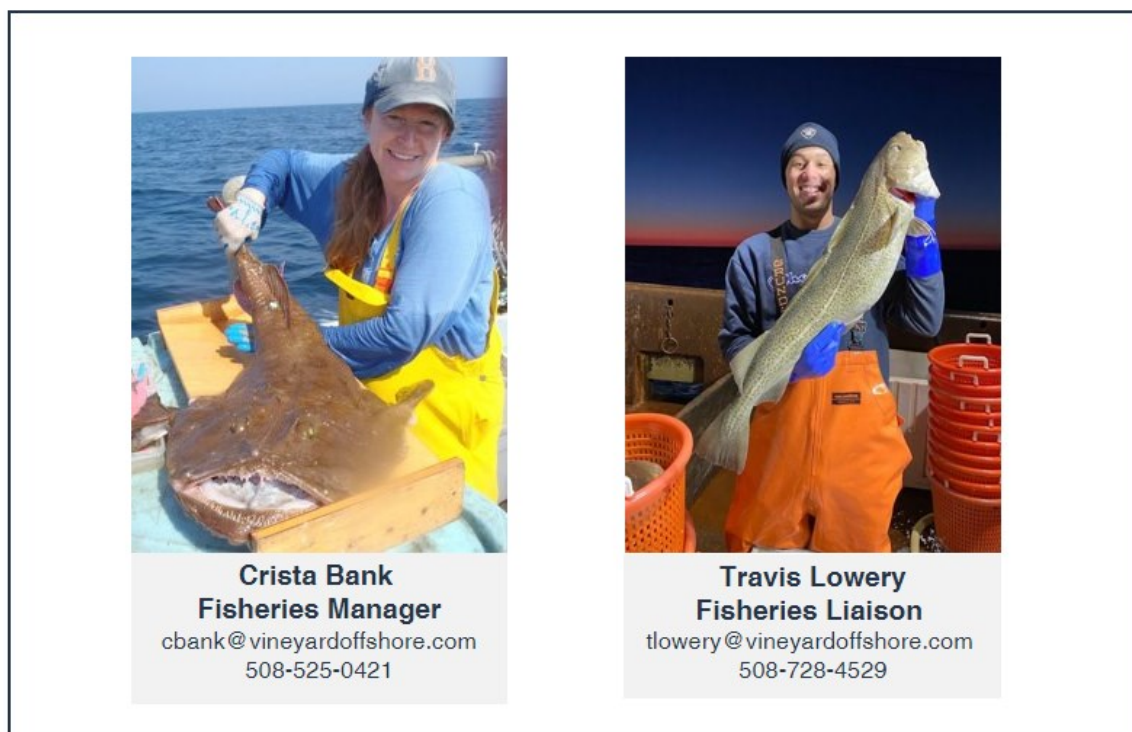
[https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/WIND/ALL\\_WEA\\_BY\\_AREA\\_DATA.html](https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/WIND/ALL_WEA_BY_AREA_DATA.html)

oversees Vineyard Offshore’s efforts to build and maintain relations with the fishing industry and surrounding communities. This includes directing outreach, developing fisheries research programs, and identifying potential workforce opportunities for fishing industry involvement. She has spent the last four years laying the groundwork for these strategies as a Fisheries Liaison on the Vineyard Wind 1 project.

Crista’s fisheries communication efforts are supported by Travis Lowery who serves as the Fisheries Liaison for Vineyard Northeast. He is primarily responsible for developing and delivering our New England fisheries program. This program includes a range of components, such as outreach, communication strategy engagement, project planning, workforce development, and fisheries science. Travis is a fisheries biologist who spent six years working for the Marine Fisheries Field Research Group at the School for Marine Science and Technology. He spent over 300 days at sea as chief scientist working on cooperative research projects. He most recently led the ventless trap and larval surveys in the Vineyard Wind 1 lease area.

Crista and Travis are readily available by phone, email, and text for ongoing communication (see Figure 2 for contact information). Fishermen can also sign up for general updates and news, Offshore Wind Mariner Updates, and information requests by filling out a contact form on our website.

**Figure 2 Vineyard Offshore’s Fisheries Manager and Liaison**



Vineyard Offshore also employs a Marine Liaison Officer who is responsible for safe marine operations and ensuring that Vineyard Offshore is a good neighbor while on the water. As such, there will be frequent interaction, information exchange, and coordination between the fisheries team and the Marine Liaison Officer.

Vineyard Offshore will expand the fisheries team to include a Fisheries Liaison (FL), Fisheries Representatives (FRs), and Onboard Fisheries Liaisons (OFLs). Information about the role of FLs, FRs, and OFLs on offshore wind projects is provided below.

#### a. Fisheries Liaisons

FLs are employed by offshore wind developers to implement FCPs and serve as a communication conduit between offshore wind developers and the fishing industry. At Vineyard Offshore, FLs serve as a readily accessible and knowledgeable point of contact within the company that fishermen and FRs can efficiently and effectively communicate with. FLs are also tasked with:

- developing relationships and direct lines of communication with individuals that are representative of potentially impacted fishing regions, industries, and communities;
- understanding and conveying current fishing industry concerns and feedback to the fisheries team to identify and work towards solutions;
- maintaining existing working relationships with FRs, and identifying and onboarding new FRs;
- identifying potentially affected fisheries and developing communication protocols and tools that create two-way communication channels;
- coordinating with the FLs employed by other offshore wind developers to streamline fisheries communication, collaborate on fisheries research and support, and standardize programs as appropriate;
- working with scientists, federal and state agencies, fishermen, and fisheries stakeholders to develop monitoring plans for fish species and habitats of concern; and
- identifying and expanding training and work opportunities for fishermen and fishing vessels.

#### b. Fisheries Representatives

FRs do not work on behalf of offshore wind developers but represent a particular fishing community, organization, gear type, port, region, state, or sector(s). FRs are responsible for communicating fisheries concerns, issues, and other input to offshore wind developers. Typically, an FR is an active fisherman or group representing active fishermen within the region, fishery, state, or sector they represent. While FRs are compensated for their time and expenses by offshore wind developers, their duty is to the fishing region, industry, organization, gear type, or sector they represent.

Vineyard Offshore is committed to maintaining an effective network of FRs. Vineyard Offshore engages with nine FRs who represent a variety of gear types and homeports in Connecticut, Massachusetts, New York, and Rhode Island (see Figure 3). Vineyard Northeast welcomes additional FRs. If you are interested or have suggestions, please contact our FM.



**Figure 3 Vineyard Northeast Fisheries Representatives**



### c. Onboard Fisheries Liaisons

OFLs are experienced fishermen employed to assist survey vessel captains with communication and to document fishing gear in the area to help avoid interactions. OFLs continue the role of the FLs offshore so that there is effective communication on-site and in real-time. OFLs report to the FLs and serve as the FLs' "eyes, ears, and voice" during offshore operations.

Among other things, the OFL records observed fisheries activities, ensures survey vessel operations are compliant with the FCP and other fisheries-related policies, and seeks to avoid negative fisheries interactions by looking out for fixed gear and establishing communications (usually by very high-frequency [VHF] radio) with fishing vessels when appropriate. In the event of a negative fisheries interaction, the OFL works with the FLs and relevant FRs to resolve the matter safely, fairly, and efficiently.

## V. Fisheries Engagement

Starting with the Vineyard Wind 1 project, Vineyard Offshore's team has over a decade of experience engaging with commercial and recreational fishermen, vessel owners, fishing advocacy organizations, shore support services, and fisheries research institutions on offshore wind. Our FM and other members of our staff have met with hundreds of fisheries stakeholders in recent years, including fishermen from various gear types and sectors, fishing advocacy organizations, and local fisheries groups who are most likely to be affected by offshore wind development on the OCS. Aside from building relationships with the region's fishermen and fisheries stakeholders, a key objective of our engagement efforts is to build trust and look for mutually beneficial opportunities to work with the fishing industry.

Vineyard Offshore has and will continue to employ a variety of outreach methods and tools to communicate and maintain relationships with fishermen and fisheries stakeholders. These outreach methods and tools include, but are not limited to, the following:

- organizing bi-weekly meetings with FRs to share project information and discuss concerns and current issues facing the fishing industry;
- working with FRs to distribute flyers, charts, FAQs, and other relevant information through their networks and communication channels;
- creating outreach materials for fishing communities to distribute at different events as well as local bait and tackle shops in the region;
- holding “port hours” with FLs from other offshore wind developers at ports in Montauk, New York, New Bedford, Massachusetts, Narragansett, Rhode Island, and Stonington, Connecticut to provide information to fishing vessel crews who fish in or transit through the New York Bight;
- maintaining a website with information specifically for fishermen, including fisheries science information, charts, mariner updates of offshore vessel activity, and vessel Requests for Information (RFIs);
- maintaining a database of fishing vessels interested in offshore wind, survey vessel, and guard vessel work as identified through our vessel RFI;
- reaching out to local recreational fishing organizations and clubs;
- presenting project information and updates on fisheries science at recreational organization meetings;
- hosting tables at commercial marine expos and recreational fishing shows;
- engaging with recreational fishing tournaments and derby organizers, including sponsoring events;
- engaging with local recreational fishing experts and influencers with a high social media presence to increase project awareness; and
- relying on word of mouth (i.e., reaching out to a fisherman at the request of another fisherman).

Vineyard Offshore is in regular contact with the relevant federal and state agencies on fisheries-related matters. In addition, we are or will become a member of and/or active participants in the following technical working groups, advisory boards, councils, and commissions:

- International Council for the Exploration of the Seas (member of Working Group on Offshore Wind Development and Fisheries)
- Massachusetts Fisheries Working Group on Offshore Wind Energy
- Massachusetts Habitat Working Group on Offshore Wind Energy
- Mid-Atlantic Fishery Management Council
- New England Fishery Management Council
- New York State Energy Research and Development Authority's (NYSERDA's) Environmental Technical Working Group
- NYSERDA's Fisheries Technical Working Group
- Regional Wildlife Science Collaborative for Offshore Wind
- Responsible Offshore Science Alliance

Finally, we understand that some fishermen do not feel adequately represented by fishing organizations or FRs, and therefore prefer to share information and concerns individually and through different channels of communication. We recognize that individuals' concerns are just

as important as group concerns and will continue to reach out to individual fishermen and respect requests for anonymity.

## VI. Offshore Communication Protocols

### a. Overview

The offshore communications protocols outlined below will be adjusted and adapted over time to reflect best practices and lessons learned. Similar protocols will be standardized and implemented for construction activities at the appropriate time.

E-mail alerts are a critical communication tool to keep fishermen apprised of offshore activities, and we will actively encourage all fishermen and fisheries stakeholders to sign up for these alerts on our website.

### b. Fishing Industry Communication Protocol Before and During Offshore Survey Work

Our offshore survey work communication protocol, which incorporates recommendations from fishermen and state agency protocols, is as follows:

- coordinate with the US Coast Guard to issue Notices to Mariners.
- create Offshore Wind Mariner Updates (OWMUs) that provide survey vessel(s) picture(s) and contact information, a chart showing the location and approximate duration of vessel activity, OFL contact information, and scout vessel picture(s) and contact information.
- post OWMUs on our website, send them to our fisheries e-mail alert list, and share them on our main social media channels –LinkedIn, Facebook, Twitter, and Instagram.
- work with FRs to share information through their email lists and other media channels.
- announce and publicize survey activities through state agencies, fishing organization websites, fish houses, and newsletters.
- send out regular email and/or text updates detailing progress, both for work completed and upcoming work areas, to various parties during offshore work.

### c. Geological Survey Vessel Communication and Fishing Gear Protocols

Vineyard Offshore will contract with local fishermen to serve as OFLs onboard survey vessels to assist vessel captains with communication and document fishing gear in the area to help avoid interactions, as noted above. OFLs with local fishing experience and knowledge of the area will typically be contracted for the duration of a survey vessel's operations.

Before a survey trip begins, FLs and OFLs will attend pre-trip meetings with the survey vessel captain and crew to review the specifics of the fisheries active in the area. If an FL has known coordinates of fixed gear in the area, the information will be shared with the survey vessel captain and OFL. The survey vessel captain and crew will be instructed to communicate respectfully with fishermen and work around fishing gear to the greatest extent practicable.

The captain, crew chief, Vineyard Offshore's client representative, and OFL will review and sign off on the communication and gear interaction protocols, which are outlined below, at the start of a survey campaign and whenever there is a new captain or party chief.

### Communication Protocol for Survey Vessel Captains

Survey vessel captains and crew will implement the following communication protocol during offshore surveys:

- Provide the OFL with a VHF unit to monitor radio communications and to be able to communicate directly with fishermen if agreed upon with the vessel captain.
- Attempt to establish radio contact with any fishing vessels that are encountered. If a fishing vessel is not responding to radio calls, the OFL will try to communicate with the fishing vessel. If the OFL is off watch, the crew will wake up the OFL if asleep to engage in communication if necessary.
- Report all communication between fishing vessels and the OFL to Vineyard Offshore.
- Immediately alert the OFL about fishing gear interactions, including waking up the OFL if necessary.
- Work around fishing gear to the greatest extent practicable.
- Plot fixed gear locations while the OFL is off watch and relay that information to the OFL when s/he is back on watch.
- Establish agreed-upon safety zones and relay that information to fishing vessels in the area.
- Provide the OFL with access to the wheelhouse to set up equipment, if practicable, along with a reliable internet connection.

### Fixed Gear Interaction Protocols for Survey Vessels

The following protocol will be implemented in the event of an incident between a survey vessel and static fishing gear:

- Immediately notify the OFL (wake up if off watch).
- Log the fishing gear interaction in both the daily vessel report spreadsheet and the Interaction Log, including the time, location, photos, details of events, etc.
- If the fishing gear is entangled around survey equipment and is brought on board, the OFL will determine if the fishing gear is active or if it is abandoned (i.e., ghost gear).
- For active fishing gear where the line needs to be severed, keep any severed fishing gear on board.
- For active fishing gear where the line does not need to be severed, return the fishing gear to the water. Take photos of the gear and record the time and vessel position where the fishing gear was returned.
- If the OFL determines that the fishing gear is not actively engaged in fishing, keep the abandoned fishing gear on board and record the position where it was retrieved.
- Bring all active severed fishing gear and ghost gear back to shore. If the owner can be identified, they will be notified, and the gear will be returned.
- For every incident, record vessel location and the time of any incident; log the buoy permit number and color, as available; and take pictures of the gear.
- Notify the FL in charge onshore as soon as possible.

#### d. Safety Management System/Emergency Communication Protocols

An important objective of this FCP is to enhance the safety of all ocean users in and around a project area during development, construction, operations, and decommissioning. Our Safety Management System will outline clear communication protocols and procedures for emergency events such as collision or allision of a vessel with a wind turbine structure, gear entanglement, damage to cables by fishing activity, catastrophic failure of a wind turbine, or another event. Safety planning will be further elaborated on in future updates of the FCP.

### VII. Fishing Gear Loss and Compensation

Vineyard Offshore is currently developing a fishing gear loss and compensation protocol but anticipates adopting the same or a substantially similar standard gear loss/damage claims form that was previously developed through coordination with FRs, FLs, and other developers for the Vineyard Wind 1 project. This form has been adopted by other developers, including Equinor and Mayflower, and provides a standard approach to fishing gear loss and compensation across several lease areas and projects.



**Vineyard Mid-Atlantic LLC\***  
**Lease OCS-A 0544**

**Fisheries Communication Plan: Lease Area 544**

2022-12-31

\*Vineyard Mid-Atlantic LLC is a Vineyard Offshore LLC affiliate.

**Document Control**

<b>Document Title:</b>	<b>Fisheries Communication Plan: Lease Area 544</b>
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## 1. Introduction

Vineyard Offshore is an offshore wind development company established by the same team that developed Vineyard Wind 1 (Lease Area OCS-0501), the nation's first commercial-scale offshore wind project. Vineyard Offshore leads the development of two lease areas along the US East Coast – Lease Area OCS-A 0544 (also known as Vineyard Mid-Atlantic) and Lease Area OCS-A 0522 (also known as Vineyard Northeast).

Section 3.1.2.2. of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (the “Lease Agreement”) for Lease Area OCS-A 0544 requires Vineyard Mid-Atlantic to develop a publicly available Fisheries Communication Plan (FCP). This document serves as the FCP for Vineyard Mid-Atlantic in satisfaction of the above-cited Lease Agreement provision and will be implemented by Vineyard Offshore as the developer.

The FCP is a living document based on best practice guidance and input from fishermen and fisheries stakeholders. It outlines our proactive approach to fisheries communication to ensure effective and regular engagement with a wide range of fishermen and fisheries stakeholders. This FCP aligns with the Vineyard Wind 1 FCP, which was first drafted in 2011 to improve communication with fishermen potentially affected by the development of that offshore wind project. Since then, our communications plan and approach has evolved and grown with over ten years of input from fisheries stakeholders. This document will be updated regularly, in response to stakeholder feedback and to incorporate lessons learned, to ensure communication protocols and tools remain relevant and effective.

Vineyard Offshore strongly believes that the offshore wind and fishing industries can successfully co-exist in the marine environment, and we will continue the work started with Vineyard Wind 1 to build bridges between the two sectors. We will also continue to fund research, share data, participate in regional science initiatives, and expand our prior efforts to use fishermen and/or fishing vessels to support offshore site assessment and data gathering activities.

Visit <https://www.vineyardoffshore.com/fishermen> to sign-up for updates, Notices to Mariners, and information requests as well as to access charts, frequently asked questions (FAQs), and our fisheries science reports.

## 2. Communication Goals and Objectives

The Objectives of the FCP are as follows:

- engage in proactive communication with fisheries stakeholders;
- build and maintain relations with the fishing industry and surrounding communities;
- develop fisheries research programs;
- identify potential workforce opportunities for fishing industry involvement; and
- response to stakeholder feedback and to incorporate lessons learned, to ensure communication protocols and tools remain relevant and effective.

### 3. Background and Lease Description

Lease Area OCS-A 0544, within the New York Bight, is a 43,056-acre site located approximately 37 kilometers (km) south of Long Island, New York in water depths of 40 – 46 meters (m) on the Outer Continental Shelf (OCS; Figure 1). The lease area abuts Empire Wind’s Lease Area OCS-A 0512 along its western edge and has water depths between 134.5 – 148 feet (22.4 – 24.6 fathoms).

Several potential offshore export cable corridors (OECCs) that could connect Lease 544 to landfall locations along the north Atlantic coast are being evaluated. Siting feasibility for potential OECC landfalls is being performed at this time.

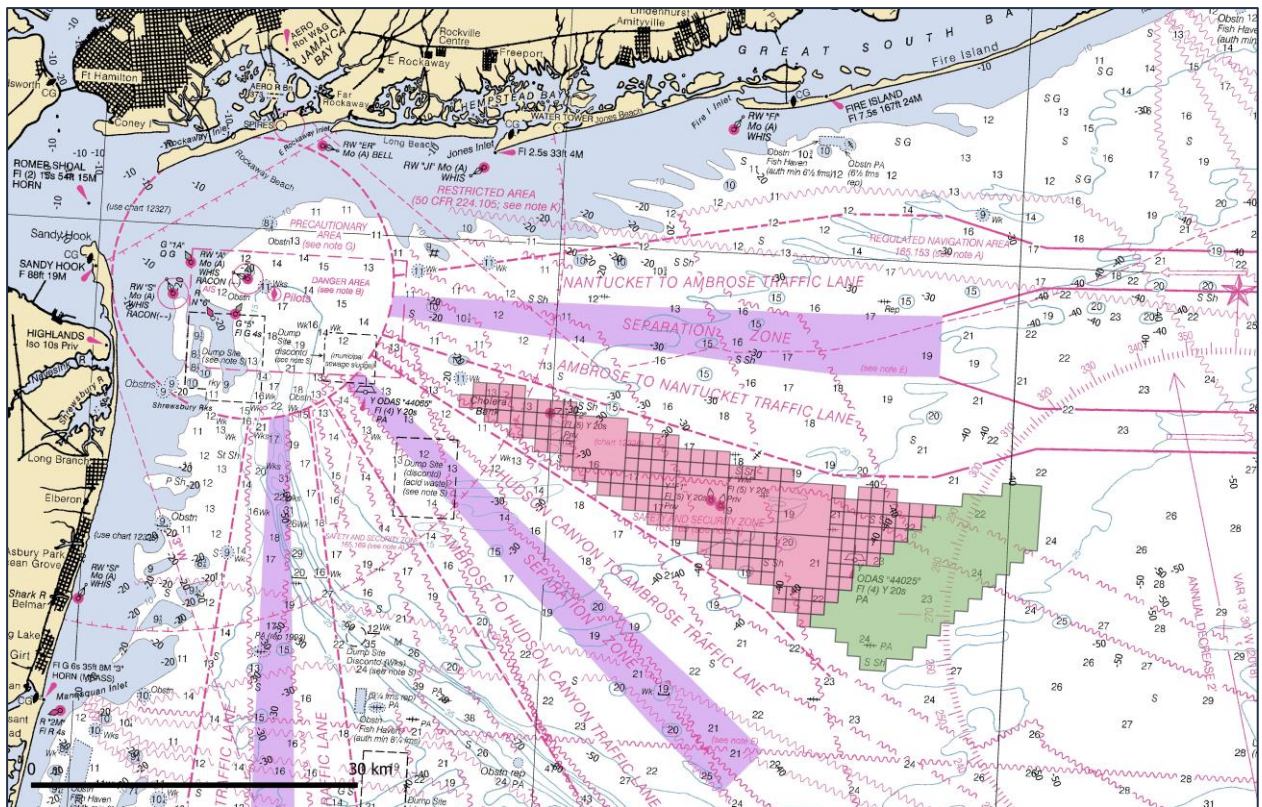


Figure 2: Location of Lease Area OCS-A 0544 (shaded green) in the New York Bight Wind Energy Area. Empire Wind Lease Area OCS-A 0512 (pink shading) is adjacent to the west. Nautical chart 12300 in the background (soundings in fathoms).

## 4. Potentially Affected Fisheries

An analysis published by the National Oceanic and Atmospheric Administration (NOAA) in 2021 indicates that the commercial fisheries most likely to be most affected<sup>1</sup> by offshore wind site assessment, development, construction, and operations activities in Vineyard Mid-Atlantic are: Sea Scallop; Mackerel, Squid, and Butterfish; Monkfish; Surfclam, Ocean Quahog; and Summer Flounder, Scup, Black Sea Bass.<sup>2</sup> Other FMPs and fisheries may also be affected. Vineyard Offshore will conduct fisheries outreach and engagement to verify and refine NOAA's assessment of potential impacted commercial and recreational fisheries in Vineyard Mid-Atlantic as well along any potential offshore export cable corridors.

## 5. Fisheries Team

The Fisheries Team for Vineyard Mid-Atlantic will consist of the following members, whose roles are described below:

- Fisheries Manager (FM)
- Marine Operations Officer (MOO)
- Fisheries Liaison (FL)
- Fisheries Representatives (FRs)
- Onboard Fisheries Liaisons (OFLs)

### 5.1 Fisheries Manager

Our fisheries communication efforts are led by our FM Crista Bank, a fisheries biologist with deep knowledge of fishing practices as well as an extensive network of personal relationships with fishermen and fishery organizations in the region (see Figure 2). Crista oversees Vineyard Offshore's efforts to build and maintain relations with the fishing industry and surrounding communities. This includes directing outreach, developing fisheries research programs, and identifying potential workforce opportunities for fishing industry involvement. She has spent the last four years laying the groundwork for these strategies as a Fisheries Liaison on the Vineyard Wind 1 project.

Crista is readily available by phone, email, and text for ongoing communication (see Figure 2 for contact information). Fishermen can also sign up for general updates and news, offshore wind mariner updates, and information requests by filling out a contact form on our website.

Vineyard Offshore also employs a Marine Operations Officer (MOO), also known as the Marine Operations Liaison Officer (MLO), who is responsible for safe marine operations and ensuring

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<sup>1</sup> NOAA defines "most impacted" as the Fisheries Management Plans (FMPs) deriving the most revenue from an area over the 12-year analysis period of 2008 to 2019, indicating the highest potential for impact to the industry from a reduction in fishing area.

<sup>2</sup> [https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/WIND/WIND\\_AREA\\_REPORTS/OCS\\_A\\_0544.html](https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/WIND/WIND_AREA_REPORTS/OCS_A_0544.html).

that Vineyard Offshore is a good neighbor while on the water. As such, there will be frequent interaction, information exchange, and coordination between the fisheries team and the MOO.

The roles of the Fisheries Liaison (FL), Fisheries Representatives (FRs), and Onboard Fisheries Liaisons (OFLs) are described below.



Figure 2 Vineyard Offshore's Fisheries Manager

## 5.2 Fisheries Liaisons

FLs are employed by offshore wind developers to implement FCPs and serve as a communication conduit between offshore wind developers and the fishing industry. At Vineyard Offshore, FLs serve as a readily accessible and knowledgeable point of contact within the company that fishermen and FRs can efficiently and effectively communicate with. FLs are also tasked with:

- developing relationships and direct lines of communication with individuals that are representative of potentially impacted fishing regions, industries, and communities;
- understanding and conveying current fishing industry concerns and feedback to the fisheries team to identify and work towards solutions;
- maintaining existing working relationships with FRs, and identifying and onboarding new FRs;
- identifying potentially affected fisheries and developing communication protocols and tools that create two-way communication channels;
- coordinating with the FLs employed by other offshore wind developers to streamline fisheries communication, collaborate on fisheries research and support, and standardize programs as appropriate;

- working with scientists, federal and state agencies, fishermen, and fisheries stakeholders to develop monitoring plans for fish species and habitats of concern; and
- identifying and expanding training and work opportunities for fishermen and fishing vessels.

### 5.3 Fisheries Representatives

FRs do not work on behalf of offshore wind developers but represent a particular fishing community, organization, gear type, port, region, state, or sector(s). FRs are responsible for communicating fisheries concerns, issues, and other input to offshore wind developers. Typically, an FR is an active fisherman or group representing active fishermen within the region, fishery, state, or sector they represent. While FRs are compensated for their time and expenses by offshore wind developers, their duty is to the fishing region, industry, organization, gear type, or sector they represent.

Vineyard Offshore is committed to maintaining an effective network of FRs and is currently seeking FRs for Vineyard Mid-Atlantic. If you are interested or have suggestions, please contact our FM.

### 5.4 Onboard Fisheries Liaisons

OFLs are experienced fishermen employed to assist survey vessel captains with communication and to document fishing gear in the area to help avoid interactions. OFLs continue the role of the FL offshore so that there is effective communication on-site and in real-time. OFLs report to the FLs, and serve as the FLs' "eyes, ears, and voice" during offshore operations.

Among other things, the OFL records observed fisheries activities, ensures survey vessel operations are compliant with the FCP and other fisheries-related policies, and seeks to avoid negative fisheries interactions by looking out for fixed gear and establishing communications (usually by very high-frequency [VHF] radio) with fishing vessels when appropriate. In the event of a negative fisheries interaction, the OFL works with the FLs and relevant FRs to resolve the matter safely, fairly, and efficiently.

## 6. Fisheries Engagement

Starting with the Vineyard Wind 1 project, Vineyard Offshore's team has over a decade of experience engaging with commercial and recreational fishermen, vessel owners, fishing advocacy organizations, shore support services, and fisheries research institutions on offshore wind. Our FM and other members of our staff have met with hundreds of fisheries stakeholders in recent years, including fishermen from various gear types and sectors, fishing advocacy organizations, and local fisheries groups who are most likely to be affected by offshore wind development on the OCS. Aside from building relationships with the region's fishermen and fisheries stakeholders, a key objective of our engagement efforts is to build trust and look for mutually beneficial opportunities to work with the fishing industry.

Vineyard Offshore has and will continue to employ a variety of outreach methods and tools to communicate and maintain relationships with fishermen and fisheries stakeholders. These outreach methods and tools include, but are not limited to, the following:

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- Massachusetts Fisheries Working Group on Offshore Wind Energy
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- Mid-Atlantic Fishery Management Council
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- NYSERDA’s Fisheries Technical Working Group
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Finally, we understand that some fishermen do not feel adequately represented by fishing organizations or FRs, and therefore prefer to share information and concerns individually and through different channels of communication. We recognize that individuals’ concerns are just as

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Our offshore survey work communication protocol, which incorporates recommendations from fishermen and state agency protocols, is as follows:

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- post OWMUs on our website, send them to our fisheries e-mail alert list, and share them on our main social media channels —LinkedIn, Facebook, Twitter, and Instagram;
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- announce and publicize survey activities through state agencies, fishing organization websites, fish houses, and newsletters; and
- send out regular email and/or text updates detailing progress, both for work completed and upcoming work areas, to various parties during offshore work.

### 6.3 Geological Survey Vessel Communication and Fishing Gear Protocols

Vineyard Offshore will contract with local fishermen to serve as OFLs onboard survey vessels to assist vessel captains with communication and document fishing gear in the area to help avoid interactions, as noted above. OFLs with local fishing experience and knowledge of the area will typically be contracted for the duration of a survey vessel's operations.

Before a survey trip begins, FLs and OFLs will attend pre-trip meetings with the survey vessel captain and crew to review the specifics of the fisheries active in the area. If an FL has known coordinates of fixed gear in the area, the information will be shared with the survey vessel captain and OFL. The survey vessel captain and crew will be instructed to communicate respectfully with fishermen and work around fishing gear to the greatest extent practicable.

The captain, crew chief, Vineyard Offshore's client representative, and OFL will review and sign off on the communication and gear interaction protocols, which are outlined below, at the start of a survey campaign and whenever there is a new captain or party chief.

#### 6.4 Communication Protocol for Survey Vessel Captains

Survey vessel captains and crew will implement the following communication protocol during offshore surveys:

- Provide the OFL with a VHF unit to monitor radio communications and will be able to communicate directly with fishermen if agreed upon with the vessel captain.
- Attempt to establish radio contact with any fishing vessels that are encountered. If a fishing vessel is not responding to radio calls, the OFL will try to communicate with the fishing vessel. If the OFL is off watch, the crew will wake up the OFL if asleep to engage in communication if necessary.
- Report all communication between fishing vessels and the OFL to Vineyard Offshore.
- Immediately alert the OFL about fishing gear interactions, including waking up the OFL if necessary.
- Work around fishing gear to the greatest extent practicable.
- Plot fixed gear locations while the OFL is off watch and relay that information to the OFL when s/he is back on watch.
- Establish agreed-upon safety zones and relay that information to fishing vessels in the area.
- Provide the OFL with access to the wheelhouse to set up equipment, if practicable, along with a reliable internet connection.

#### 6.5 Fixed Gear Interaction Protocols for Survey Vessels

The following protocol will be implemented in the event of an incident between a survey vessel and static fishing gear:

- Immediately notify the OFL (wake up if off watch).
- Log the fishing gear interaction in both the daily vessel report spreadsheet and the Interaction Log, including the time, location, photos, details of events, etc.
- If the fishing gear is entangled around survey equipment and is brought on board, the OFL will determine if the fishing gear is active or if it is abandoned (i.e., ghost gear).
- For active fishing gear where the line needs to be severed, keep any severed fishing gear on board.
- For active fishing gear where the line does not need to be severed, return the fishing gear to the water. Take photos of the gear and record the time and vessel position where the fishing gear was returned.
- If the OFL determines that the fishing gear is not actively engaged in fishing, keep the abandoned fishing gear on board and record the position where it was retrieved.
- Bring all active severed fishing gear and ghost gear back to shore. If the owner can be identified, they will be notified, and the gear will be returned.
- For every incident, record vessel location and the time of any incident; log the buoy permit number and color, as available; and take pictures of the gear.
- Notify the FL in charge onshore as soon as possible.

#### 6.6 Safety Management System/Emergency Communication Protocols

An important objective of this FCP is to enhance the safety of all ocean users in and around a project area during development, construction, operations, and decommissioning. Our Safety Management System will outline clear communication protocols and procedures for emergency



events such as collision or allision of a vessel with a wind turbine structure, gear entanglement, damage to cables by fishing activity, catastrophic failure of a wind turbine, or another event. Safety planning will be further elaborated on in future updates of the FCP.

## 7. Fishing Gear Loss and Compensation

Vineyard Offshore is currently developing a fishing gear loss and compensation protocol but anticipates adopting the same or a substantially standard gear loss/damage claims form that was previously developed through coordination with FRs, FLs, and other developers for the Vineyard Wind 1 project. This form, which was also adopted by other developers including Equinor and Mayflower, will be posted on our website before the start of any offshore activities.

## 8. Information and Data Sharing

Vineyard Offshore will establish a dedicated webpage for the Vineyard Mid-Atlantic project at <https://www.vineyardoffshore.com>. This webpage will be updated regularly and will contain information such as:

- Project descriptions
- Project benefits information
- Data collected
- Key documents
- Project initiatives
- Key contact information

A dedicated webpage for Fisherman will supplement the direct communication described in Section 6.

## 9. Tracking Plan Efficacy & Reporting

Vineyard Mid-Atlantic will maintain records of meetings and other key communication with each agency. The following information will be captured for each meeting or engagement:

- Meeting Date
- Meeting Objective(s)
- Concern(s)/Issues Raised
- Follow-up action(s) and/or approach for resolution
- Concern(s)/Issue(s) Resolved

The efficacy of this FCP will be measured by the frequency of communications, constructive feedback/guidance/or concerns raised, and ability to incorporate feedback and/or resolve issues.



**Attachment To:**

**Section 14 - Fisheries Mitigation Plan**

**ATTACHMENT 14-2**

**REDACTED**



**Attachment To:**

**Section 14 - Fisheries Mitigation Plan**

**ATTACHMENT 14-3**

**COMMENTS ON BOEM'S DRAFT FISHERIES MITIGATION  
GUIDANCE**



August 22, 2022

*Submitted via regulations.gov*

Office of Renewable Energy Programs  
Bureau of Ocean Energy Management  
45600 Woodland Road, VAM-OREP  
Sterling, Virginia 20166

**RE: Comments on the Draft Guidance for Mitigating Impact to Commercial and Recreational Fisheries from Offshore Wind Energy Development (BOEM-2022-0033)**

Vineyard Wind 1 LLC appreciates the opportunity to comment on the Draft Guidance for Mitigating Impact to Commercial and Recreational Fisheries from Offshore Wind Energy Development (the “Guidance”) published by the Bureau of Ocean Energy Management (BOEM) on June 23, 2022. We welcome BOEM’s efforts to develop a standard set of recommended practices to mitigate impacts to commercial and recreational fisheries. Vineyard Wind is a member of the American Clean Power Association’s Fisheries Working Group (ACP FWG), and we have contributed to and echo comments submitted by the ACP FWG. Our supplemental comments focus on the guidance provided in Part E., Financial Compensation, and reflect the experience we have gained developing the fisheries compensatory mitigation program for Vineyard Wind 1. Vineyard Wind 1 is currently under construction and will be the nation’s first utility-scale offshore wind project.

In accordance with our commitment to provide compensatory mitigation to fishermen, we have spent the better part of a year evaluating approaches to implementing a workable and transparent claims process over the 30-year life of the project. Our objective has been to develop a data-driven compensation approach that utilizes the best available data and consistent criteria, and we have done so in consultation with state agencies, the National Oceanic and Atmospheric Administration (NOAA), commercial fishermen, and others. At the outset, we would like to offer our full support for the General Approach and Management of Funds recommendations in the Guidance, and we believe that the offshore wind industry is aligned with fisheries stakeholders on these points. It is essential for fisheries compensation programs to be fair and equitable across fisheries and fishing communities. We also strongly favor the use of independent third parties to manage programs and disburse funds.

Our primary recommendation is that BOEM refrain from endorsing a particular model or methodology for a claims process. We have found that the claims-based/causation model detailed in the Guidance on page 10 is largely unworkable for both fishermen and offshore wind developers due to current data limitations, confidentiality concerns, and multiple confounding factors that make it challenging to tie individual fishing vessel revenue impacts to individual offshore wind projects.

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A primary disadvantage of a causation-based process is that it requires fishermen to demonstrate revenue impacts from an individual offshore wind project relative to a baseline (e.g., a fishing vessel earned \$X from a project area prior to the construction and operation of the project and once constructed that project reduced the fishing vessel's earnings by \$Y in a given year). Establishing baselines for individual fishing vessels, however, is difficult as most fishermen do not track or record vessel movements, catch data, landings, etc. at a fine enough scale to tie fishing activities or revenues to a specific project area or offshore export cable corridor area. While NOAA Fisheries tracks vessel information through a Permit History Identifier, confidentiality concerns limit access to these data. Fishermen can request access to their data, but it would be a significant lift for fishermen or any other party to process these data to establish a baseline for individual fishing vessels thus increasing the cost and administrative burden associated with these programs. Moreover, NOAA Fisheries data may need to be supplemented with state data (e.g., nearshore fisheries, lobster, Jonah crab) and other data sources or analyses to provide a complete picture.

A claims-based process would also require fishermen to demonstrate economic impacts to qualify for compensation. However, multiple confounding factors and recordkeeping burdens will frustrate efforts to establish causation between an offshore wind project and changes to a fishing vessel's earnings. Confounding factors include other offshore wind projects, climate change, seasonal variability, changes in fishing movements, and fluctuating seafood and commodity prices. Moreover, in assessing a claim for compensation, it is also difficult to determine the extent to which fishermen could recoup lost revenues from other fishing areas.

For these reasons, a claims-based/causation model is unlikely to be a workable model for most project-specific compensation programs in the near- to medium-term. It may be more workable at a regional level. In our view, rather than choosing one model as a minimum standard, we recommend that BOEM focus on outlining a set of principles or objectives that offshore wind developers should adhere to when developing compensatory mitigation programs.

As an example, the key objectives that have guided our efforts for the Vineyard Wind 1 fisheries compensatory mitigation program are as follows:

- create a fair, simple, and transparent program;
- limit the administrative burden for all parties;
- reduce the potential for gaming and fraud; and
- resolve uncertainties and data limitations in the fishermen's favor.

A principle or objective-based approach to compensation programs in the Guidance would set a more effective minimum standard for compensatory mitigation and allow offshore wind developers and other parties the flexibility they need to design and implement programs on a project-specific, regional, or another basis to address the potential economic impacts of offshore wind on fishermen.

Thank you for your consideration.

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August 22, 2022

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**Re: Comments on the Draft Guidance for Mitigating Impact to Commercial and Recreational Fisheries from Offshore Wind Energy Development**

*Submitted via regulations.gov, Docket ID BOEM-2022-0033*

The American Clean Power Association (“ACP”) welcomes the opportunity to comment in response to the Bureau of Ocean Energy Management’s (“BOEM”) Draft Fisheries Mitigation Guidance Reducing or Avoiding Impacts of Offshore Wind Energy on Fisheries (“Guidance”). ACP is a national renewable energy trade association that unites the power of offshore wind, onshore wind, solar, storage, and transmission companies<sup>[1]</sup>. ACP has established a Fisheries Working Group (“FWG”), comprised of developers and leaseholders, to coordinate consensus and share best practices on the offshore wind industry’s interaction with the environment, fishermen, fishing communities, and the fishing industry.

The ACP FWG continues to explore ways for the fishing and offshore wind industries to productively coexist and appreciates BOEM’s efforts to create guidance that recognizes issues of common interest to both groups. ACP and its members in the offshore wind industry support the spirit of and process by which this draft mitigation was developed. It is clear that, in addition to the public meetings and comment periods for this process, BOEM has incorporated experiences and resources from other efforts which included extensive input by stakeholders, including the fishing and offshore wind industries. Similarly, the ACP FWG supports the recent efforts of the Special Initiative for Offshore Wind (SIOW) to coordinate with a group of nine Atlantic states (and growing) to explore a regional compensatory mitigation approach that provides consistency and transparency for the fishing industry, offshore wind developers, federal agencies, and the states themselves.

The ACP FWG appreciates BOEM’s efforts to document common mitigation measures across East coast projects that can serve as industry standards for offshore wind development in other regions of the Outer Continental Shelf. The ACP FWG also appreciates BOEM’s effort to incorporate evidence-based solutions to mitigating the effects of offshore wind on fisheries and fishing. To both points, while BOEM’s efforts do provide transparency and predictability for developers and ocean users, ACP FWG recommends that BOEM consider which mitigation measures and standard continued to be applied on a project-by-project basis. Specific to compensation, the ACP FWG appreciates BOEM considering levels of compensation appropriate to phases of offshore wind development and BOEM’s assessment of its legal authority to administer funds.

As BOEM finalizes its guidance, we urge the agency to bear in mind other key principles:

- Every offshore wind project is different, with location- and developer-specific design needs and commercial considerations, as well as a unique set of potentially affected fisheries. Unless dictated by bid conditions or lease stipulations, final decisions on mitigation measures should be made on a project-by-project basis in close consultation with agencies and developers.
- The final guidance must acknowledge the importance of balancing fisheries concerns against project economics and the needs of other ocean users. The ACP FWG urges BOEM to avoid using absolute words like “maximize” or “minimize” in its final guidance, and instead recommend “using commercially and technically feasible measures” to achieve its objectives.

The ACP FWG supports BOEM’s recommendation that lessees engage with the commercial and recreational fishing industries, tribal communities, and others most impacted by their offshore wind development activities, prior to the onset of any project work. ACP and its members have echoed these sentiments and recommended this engagement to improve communication between ocean users and developers, to promote transparency, to inform the public, and to increase industry accountability. Developers routinely utilize such early engagement to help inform the public and receive valuable input from the WEA designation process to lease sales to early lease activities to the preparation of Construction and Operation Plans (“COPs”) that must include proposed project-specific mitigations and resource monitoring plans. This kind of effective, transparent communication is vital to ensures the success of these projects, and more broadly the offshore wind industry.

The ACP FWG supports BOEM’s own continued, direct engagement of the commercial and recreational fishing industries and communities at the earliest stages of the process. BOEM’s engagement with these ocean users, as well partner federal and state agencies, to collect information and data to inform the initial designation of WEAs and eventually lease areas assists developers in understanding and mitigating impacts to fishing. We also look forward to continued

engagement with BOEM as the agency considers the input of the Atlantic states, collaborating federal agencies, and the industry as the agency moves toward finalizing this Guidance.

ACP and its members also support BOEM's use of the Council of Environmental Quality's (CEQ) definition of mitigation.<sup>1</sup> This framework is an appropriate and well-understood way to manage offshore wind project effects, particularly with respect to fisheries. The Draft BOEM Fisheries Mitigation Guidance provides robust recommendations on avoidance (1), minimization (2), and Compensation (5), but does not adequately address Rectification (3) and Reducing (4). ACP recommends that BOEM include further guidance to offshore wind developers focused on addressing Bullets 3 and 4 as it believes that this process will be most successful if all five aspects of the CEQ definition of "mitigation" are addressed given appropriate weight. The remainder of our comments are structured to comment on the specific sections of the Guidance.

### **Environmental Monitoring**

The ACP FWG agrees that BOEM and other entities, including the Responsible Offshore Science Alliance (ROSA), have developed guidance documents that provide overarching principles to inform fisheries monitoring designs for the phases of offshore wind development. The proposed Guidance could serve to supplement these existing resources with BOEM's perspective on processes that could better inform developers of information needed in the construction phase. Specifically, it would be helpful if this Guidance could include information on timelines with respect to required studies as they relate to BOEM's definitions of phases of construction.

In addition, developers are required to conduct multiple studies that result in fish mortality.<sup>2</sup> The ACP FWG recommends BOEM consider adding to this guidance document language that indicates the acceptability of using regional studies for neighboring lease owners operating in similar habitat. This would significantly reduce fish mortality and environmental impact related to the studies themselves. Further, ACP FWG suggests that BOEM consider additional language regarding the use of innovative technologies (e.g., non-extractive techniques) to perform required studies.

### **Project Siting, Design, Navigation and Access**

The ACP FWG proposes BOEM consider the following principles as it finalizes this guidance:

- Leases on the Atlantic OCS are not the same, and leaseholders may have different solutions to project siting, design, navigation, and access based on ocean users in and around specific lease areas.
- Conditions within the lease itself can vary, from ocean conditions to habitats to seafloor geology. Standard approaches may not be equally applicable across all leases. Any guidance by BOEM and consulting agencies should allow flexibility to account for

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<sup>1</sup> 40 CFR 1508.1(s).

<sup>2</sup> The industry foresees potential challenges in receiving necessary federal permits to conduct these types of surveys, which is a barrier to hiring local fishermen to conduct the studies and to completing the required studies.



variability across leases and projects within leases and not unduly restrict adaptive approaches that developers will need to take in mitigating site- or activity-specific actions.

- Unless specifically mandated by a federal lease stipulation or state procurement requirement, BOEM should provide the flexibility for the lessee to work directly with the affected fishing communities to establish reasonable and practicable project siting and design solutions. Standard layouts may not be applicable across all lease areas within an OCS region.
- In several instances, BOEM uses the term maximize or minimize when referring to one industry over another. The ACP FWG recommends this guidance should include more balanced language when discussing coexistence of ocean uses.

We now turn to BOEM's specific project recommendations.

***Recommended static cable design elements, pg. 5***

*All static cables should be buried to a minimum depth of 6 feet below the seabed where technically feasible. Technical feasibility constraints include seabed conditions that preclude burial, such as telecommunication cable crossings.*

The ACP FWG recommends that cable burial depths should be determined by the risk profiles of the seafloor and sediment conditions in the project footprint. The spatial extent of profiles can vary within a project footprint, lease area, and between leases across the extent of the Atlantic OCS. Profiles may also shift over time depending on oceanic conditions and other factors or uses in a particular area. For instance, anchoring risk from commercial/merchant shipping will set the required burial depth in/around entrances to ports, which may need to be different from a standard proposed depth. Further, there may be other ocean uses or users that require unique burial depths or techniques to avoid or mitigate interactions and this flexibility should be afforded to the developers to directly manage these instances with the affected stakeholders.

For the designed cable route, a burial assessment study is required. The burial assessment will need to detail the following: risks along the cable route suitable (lay and) burial method(s) and resulting trench profiles based upon the sediment conditions, and additional protection that may be required.<sup>3</sup> Rather than encouraging a standard depth, BOEM should encourage lessees to base cable burial depths on the outcomes provide in project-specific cable burial risk assessments, which consider all factors, conditions and other uses of the ocean that could impact the burial depths of offshore wind transmission cables. Specific to fishing activity, BOEM should allow developers flexibility to design cable protections respective of the type of fishing activity that may happen in and around their projects based on consultations with agencies and fishing community.

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<sup>3</sup> Cable Burial Risk Assessment Methodology Guidance for the Preparation of Cable Burial Depth of Lowering Specification CTC835, February 2015, available at <https://www.carbontrust.com/resources/cable-burial-risk-assessment-cbra-guidance-and-application-guid>

*Lessees should avoid installation techniques that raise the profile of the seabed, such as the ejection of large, previously buried rocks or boulders onto the surface. The ejection of this material may damage fishing gear.*

Cable route survey activities help to identify areas of potential seabed obstructions that may interfere with the installations of cables. It is the intent of developers to route cables around obstructions, sensitive habitats, archaeological areas of significance etc., to the maximum possible extent. In the event that this is not possible, the Route Clearance/Pre-Lay Grapple Run (an installation technique) (RC/PLGR) may dislodge debris in the seabed as this is the intent of this activity – to initially prepare the seabed for the burial of cables. It is possible that there could be disturbances associated with this activity, specifically the creation of a ‘furrow’ where the seabed is raised on either side. The ACP FWG recommend that BOEM consider which activities may result in disturbances that are unavoidable and not considered to be obstructions and exclude such in the final Guidance.

*If needed, cable protection measures should reflect the pre-existing conditions at the site. This mitigation measure chiefly ensures that seafloor cable protection does not introduce new obstructions for mobile fishing gear. Thus, the cable protection measures should be trawl-friendly with tapered or sloped edges. If cable protection is necessary in “non-trawlable” habitat, such as rocky habitat, then the lessee should consider using materials that mirror the benthic environment.*

The ACP FWG recommends that BOEM consider instances where there would be no additional need for protection (e.g., if an area is not trawl-friendly and/or no mobile fishing gear is used in the area).

#### ***Recommended Dynamic Cable Design Elements, pg. 5***

*Dynamic cables should be suspended at a depth that minimizes, to the extent practicable, the potential for interactions with fishing operations.*

*Where feasible, cables should share corridors and minimize the total cable footprint.*

The ACP FWG encourages BOEM to recognize that the total cable footprint in a project – whether developed independently or in collaboration with another leaseholder(s) – will be the same where the cables are installed in a shared corridor or independent corridors. Project design and the dynamic cable corridor depth should consider the regional recreational and commercial fisheries activities (e.g., epipelagic and mesopelagic) to best mitigate impacts. The ACP FWG recommends that BOEM not mandate how a developer(s) install cables or how cable corridors should be designed. BOEM should consider the risks to mandating common corridors, such as the susceptibility of a single catastrophic event (i.e., a merchant vessel transitioning with an anchor deployed), impacting all infrastructure in the corridor itself.

#### ***Recommended Dynamic Cable Design Elements, pg. 5 - 6***

*The facility design should maximize access to fisheries, including by consideration of:*

As noted above, project design must balance various technical, commercial, and ocean user considerations. The proposed language elevates one ocean user at the expense of other critical factors, including project viability. The ACP FWG recommends BOEM adopt the following wording:

*The facility design should enable continued access to fisheries, including by consideration of:*

The intent and purpose of several recommendations in this section is unclear. In some instances, it is difficult to determine which components or installation techniques BOEM is recommending (e.g., common cable corridors, regional transmission backbones, etc.). In other instances, BOEM's early siting work has already identified space-use conflicts and it is not clear what additional conflicts might remain. For some items, a clear definition of the objective or agency expectation of the developers would be helpful. The ACP FWG recommends BOEM further elaborate on these items:

*Consolidation of infrastructure, where practicable, to reduce space-use conflicts.*

It would be helpful if BOEM provided examples of this item. Developers are primarily focused on building necessary and efficient infrastructure. We recommend either eliminating this item or rephrasing it to recommend that developers consider the potential to consolidate infrastructure when creating its project layout.

*Consideration of larger turbine sizes to reduce total project footprint and meet energy production commitments.*

We are concerned that this recommendation turns the project design and engineering process on its head. While developers analyze and account for the likely benefits and costs of its wind turbine options within the permitting process, selection of wind turbine generators is a complex decision that primarily involves commercial and technical considerations. The phrasing of this item implies that reduction of the project footprint should be a driver of the developer's decision. We are also concerned that this provision could conflict with BOEM's mandate to consider prevention of waste of the wind resource under 43 U.S.C. 1337(p)(4)(C) by elevating project footprint over maximization of renewable energy generation on a lease. We recommend either eliminating this item or rephrasing to recommend that developers consider the effects of project footprint in selecting its turbines.

*Coordination of turbine and substation array layouts between and among neighboring lease areas to allow safe fishing operations and transit through multiple projects. In instances where layout design cannot accommodate two common lines of orientation across adjacent leases, the lessee should consider incorporating a 1 nautical mile setback,*

*within which no surface structures may be constructed. See Navigation and Vessel Inspection Circular 10-194 for more details.*

The ACP FWG agrees that the 1-nautical mile spacing for the southern New England lease areas for the purposes of a unified layout was appropriate for that area. This layout was situational and collaboratively designed and agreed to by those leaseholders, with substantial ocean user input and supporting technical analysis, to accommodate mariner uses in the area. However, this specific action, driven in part as response to ocean user concerns and agencies' recommendations, should not signal support for that standard in other lease areas. The 1-nautical mile separation between turbines may not be required for safe fishing operations and/or navigations for independent lease areas or adjoining projects and/or lease areas across an OCS region. If there are adjacent lease areas with different layouts, a suitably sized buffer based on a NSRA could be considered. Other markings should also be considered to inform mariners that they are leaving one lease (orientation) and entering another.

*Turbine locations should be sited to avoid known sensitive benthic features, such as natural and artificial reefs.*

The ACP FWG recommends that BOEM recognize developers are using the results of site assessment and characterization surveys (geological and geophysical surveys) to achieve this mitigation. We recommend that BOEM take the opportunity to further clarify what defines 'sensitive' benthic habitats and 'artificial reefs. For artificial reefs, BOEM should clarify if this applies to designated reefs for fish or fishing or whether this terminology refers to something broader. BOEM should also recognize that there are designated, i.e., state-based reefing locations - and undesignated artificial reef areas (i.e., mariner-created bottom structure), and which should be avoided.

*Facility planning should consider use of nature inclusive designs, where applicable, to maximize, maintain and/or provide additional available habitat for fish.*

The ACP FWG recommends that BOEM further elaborate as to which fish species are meant to benefit from nature inclusive designs. The differences in species and their habitat utilizations varies significantly across seafloor types and even in the water column. Maximizing habitat for one species could inadvertently reduce habitat for another species. The ACP FWG suggests that BOEM consider revising this mitigation to allow for site-specific species considerations and whether habitat development is necessary or should be created based on species composition in a project area.

### ***Navigation and Safety***

Regarding navigation and safety, ACP agrees with BOEM on many of the recommendations and is currently considering or actively implementing nearly all of them as appropriate per project and other site-specific circumstances. The ACP FWG recommends BOEM consider the following:

*Considering installation techniques and time windows that minimize disruption to fishing activities (e.g., simultaneous lay and burial, or conducting activity during the appropriate time of year).*

ACP recognizes mitigation as a core principle to successful offshore wind development and members are incentivized to minimize disruptions to fishing activities. However, ACP opposes citing time windows with regard to fishing activities as a determining factor in when installation construction activities can occur.

As worded, the recommendation is aimed at reducing business interruption rather than enhancing safety. If that is indeed the case, then it seems more appropriate to include this as a mitigation recommendation in the Project Siting, Design, Navigation, and Access category.

*Employing liaisons from the commercial fishing industry to provide safety and communication services during construction.*

Developers are currently contracting commercial and recreational fishermen as fisheries liaisons upon survey and project vessels, and contracting their vessels as scout and safety vessels during survey and construction stages of projects. Representatives from the fishing industry are also contracted to provide further project updates, communications and aid in safety efforts.

*Monitoring cable burial in real-time and report all potential hazard events to the USCG as soon as possible.*

Developers conduct regular cable surveys, which are included in a project's Construction and Operation Plan (COP). Regular cable surveys are frequently conducted during early stages of the project (i.e., during the construction period), and become needed less frequently over time as the project is established.

There are several foreseeable situations that could be classified as hazardous which may occur over the lifecycle of a project. To set reasonable boundaries on reporting, ACP encourages BOEM to clarify 'potential hazard events' as related to cable burial.

*Using digital information technology platforms (e.g., smartphone applications) to bring together survey and construction schedules and locations in addition to standard local notices to mariners via the USCG.*

There is not one maritime software platform (app) that has been agreed upon by the entire industry, but efforts can be made to provide standard information across whichever mediums are used. For example, currently multiple developers in the Rhode Island and Massachusetts wind energy areas are supporting a software platform that will provide project locations, survey and construction vessels, and other project news on an app that will house multiple projects and developers. This

same software may or may not be used by other developers, and BOEM should not require the use of a specific software, but instead focus on what information is shared and the frequency.

*Providing training opportunities for the commercial fishing industry to simulate safe navigation through a wind facility in various weather conditions and at various speeds.*

Currently, multiple developers are providing simulated experiences to commercial and recreational fishing interests. These efforts will continue as the offshore wind industry continues to develop because they have proven to be beneficial to demonstration attendees. These should not be continued if the intended audience and communities do not find them beneficial, likely by the time offshore wind projects are installed and commonly found in U.S. waters. In addition to these on-going activities, ACP encourages BOEM to work with the U.S. Coast Guard to develop a standard certification process verifying a mariner's completion of a navigation safety course.

In response to the guidance that lighting, marking, and AIS utilization should be as standardized as possible:

Developers of the Rhode Island and Massachusetts lease areas have established and have been working via a Joint Developer Marine Affairs Working group to discuss and coordinate efforts which include lighting and marking, uniform labeling, aids to navigation, NAV safety, etc. Prior to adopting these standards across all projects, a review amongst all maritime user groups should take place to reach standards for all WEAs.

### **Compensatory Mitigation**

Climate change driven by carbon emissions is negatively impacting the health of commercial and recreational fisheries around the world. While offshore wind energy developed at scale can help reduce future carbon emissions, and thus lessen future stresses from climate change, we acknowledge that the development of offshore wind will result in small to moderate effects on other ocean users. Where efforts to avoid, minimize, and mitigate impacts to commercial and recreational fishing are not wholly successful, we support efforts to create a coast-wide fisheries compensation process for offshore wind development that provides predictability, certainty, and resolution of fishermen's' compensation claims. While we agree that BOEM does not have authority to establish or manage a federal compensatory mitigation program, we believe BOEM's final guidance can go much further in endorsing and incentivizing the creation of an independently administered third party fund that can effectively manage a compensation fund.

The BOEM Guidance goes a long way towards trying to provide greater predictability through a transparent, data driven process, though we provide several recommendations below based on member experience. While the offshore wind and commercial fishing industries agree on many

foundational concepts, like the use of third-party fund managers, there remains a difference of opinion regarding how to estimate revenue exposure during wind farm operations. We provide suggestions below on how to add greater rigor to those estimates, but the inherent uncertainty of how to calculate losses and how individual commercial fishers will respond and adjust fishing patterns in the future highlights why such mitigation funds should be credited against discounts on auction bids and current operations fee payments.

We also encourage BOEM to support the work the Special Initiative on Offshore Wind (SIOW) has been doing to bring Northeast and Mid-Atlantic states together with the commercial fishing and offshore wind industries to create a regional third-party fisheries compensation fund. As noted above, the ACP FWG has been coordinating with SIOW and believes its efforts are the right process to create a compensation mechanism that works for everyone.

### **Gear Loss**

The ACP FWG believes that gear loss claims after the start of construction should be managed through its proposed regional, third party-managed compensatory mitigation program. ACP supports the recommendation in the draft guidance to follow minimum standards set forth in NOAA's Fisheries Contingency Fund ("FCF"). Though developers cannot model it entirely, as it is a legislatively created entity, the process has proved a workable solution to gear claims.

ACP requests that BOEM remove the following guidance language: "[a] lessee may elect to reimburse damage to fishing gear from marked and charted obstructions in order to limit interactions with lessee property." Reimbursements for interactions with known obstructions encourages unnecessary risks and goes against the first point raised in the "Safety Measures." It does not make sense for developers to reimburse gear loss related to interactions with known obstructions as doing so could invite unwanted risk. This language is also inconsistent with the administration of the FCF, which limits claimant recovery if the claimant is also at fault or was negligent (50 CFR 296.4(c)).

While we are not opposed in principle to recoverability of reasonable fees, a cap for such fees should be defined. We think fees under a gear loss program should not exceed 25%, as this will ensure most funds go to those with the claim. In addition, we suggest BOEM add language to the recommendation that allows for reasonable fees paid to an attorney, certified public accountant, or other consultant contingent to an award. As the draft guidance is currently written, it can be construed that developers should reimburse fees regardless of a claim's merits. The FCF does not consider damages and fees separately, as the FCF regulations state, "An award may also include compensation for reasonable fees paid by the claimant to an attorney, CPA, or other consultant for the preparation or prosecution of a claim." 50 CFR 296.8(d). We believe reimbursement of fees contingent to an award reflects the intent of the FCF and should be mirrored in the final guidance.

For gear loss claims made prior to the start of construction—e.g., during survey activities—ACP believes that it would be easier to maintain the status quo and have developers manage such claims individually. Most developers already have systems in place for these claims and can therefore continue to be responsive to fishermen’s gear loss claims in a timely way.

### Compensation for Lost Income

We generally agree that for the purposes of determining voluntary compensation during construction, such compensation, when appropriate, should be derived from the proportion of the project area that is rendered unavailable to fishing during active construction. Based on time of year restrictions for certain activities as well as construction logistics, it is unlikely that an exclusion zone would encompass the entire lease area for the full construction period, but rather would be located in proximity to the vessels conducting work. We agree with BOEM’s draft guidance to the extent it is based on NOAA data. BOEM has also (presumably with input from NMFS) provided thoughtful methodologies to calculate exposure specific to distinct fisheries that may have data gaps.

For determining voluntary compensation reserve funds for commercial fishing during operations, BOEM’s proposed percentage exposure estimates—which BOEM rightfully acknowledges are overestimates—should be grounded in more rigorous methodology. For example, BOEM provides no basis for why 100 percent revenue exposure is a reasonable basis for the first year after construction is completed. Similarly, more detail is needed to justify the recommended values for year 2 and beyond.

Instead of the proposed percentages in operations, ACP urges BOEM to look at economic impact analyses that can be used to inform the process and serve as examples, such as those conducted by the Woods Hole Oceanographic Institution on impacts to commercial landings during construction, operations, and decommissioning. While this analysis was prepared for one project, the methodology is useful for other projects and can serve as a more appropriate starting point. Based on that export report, operational impacts were estimated to be much lower than BOEM proposed. The analysis also provides some lease area specific factors, such as potential stock effects on bivalves may be smaller spatially than finfish but of slightly longer duration.

Categories of exposure	Percentage estimate
Stock effects	Lobster & crab reduced 10% for 1 year* Bivalves/mollusks reduced 10% for 4 years* 25% of finfish stocks leave area* (*annualized per year of construction)
Constrained access during operations	Landings reduced by 0-5% from baseline Calculated as present value of 5% of baseline using a 5% discount rate, which is the average of the rate usually applied in natural



	resource valuation (3%) and the rate usually applied by the US government for public investment and regulatory analyses (7%).
Inflation	<2% (based on historical average)

Source: Rhode Island Coastal Resource Management Council South Fork Wind Consistency Determination (2021, July 1) [http://www.crmc.ri.gov/windenergy/dwsouthfork/SFWF\\_FedConsistencyDecision\\_20210701.pdf](http://www.crmc.ri.gov/windenergy/dwsouthfork/SFWF_FedConsistencyDecision_20210701.pdf), pg 204

ACP does not recommend the use of commercial growth multipliers beyond inflation. The chance of overestimation under BOEM’s approach is heightened because BOEM suggests using all available data and extrapolating into the future, even though landings vary from year to year and have generally trended downward since 2008 across almost all lease areas. ACP does not think that growth factors beyond inflation are justified by the data because of the general (though not universal) downward trend in landings, which may be exacerbated by climate change.

The above critiques of the proposed percentages should not detract from the fact that ACP agrees that a universal formula could serve as a useful alternative to performing a detailed analysis for determining compensation amounts on a project-by-project basis. It would also promote consistency across the region. But because the formula would serve as the expectation for projections throughout the Northeast region, it becomes all the more important for BOEM to provide justification for these revenue exposure estimates. Again, we encourage BOEM to review and consider the WHOI analysis to refine the impact percentages. While a standardized, nationwide approach is preferred, we recognize that supplemental analyses may be warranted for other regions where BOEM is advancing offshore wind leasing, such as the Gulf of Mexico or West Coast, due to differing fishing methods, fisheries data, and technology type.

**Strengthening Compensation Fund Through Use of Credits Against Auction Bids and/or Operating Fees**

We concur with BOEM’s assessment that it may not require lessees to make payments into a third-party compensation fund. However, we encourage BOEM to endorse what ACP believes to be the ideal solution to ensure the fund always has sufficient resources: funding the fund through lessee payments credited against auction bids and/or annual operating fee payments.

**BOEM is on The Right Track With California Proposed Sale Notice**

ACP believes BOEM is on the right track in seeking solutions to properly support and fund fisheries compensation. We were heartened by BOEM’s proposal in the Proposed Sale Notice for California<sup>4</sup> that it has regulatory authority under OCSLA to implement bidding credits for contributions to mitigation funds benefiting ocean users such as the fishing industry. Whether it takes the form of what BOEM has termed a community benefits agreement, or, preferably, a transparent third-party regional mitigation fund, the proposed bidding credit is a worthwhile policy. If BOEM paired its final fishing mitigation guidance with a commitment to use its existing

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<sup>4</sup> Proposed Sale: Pacific Wind Lease Sale 1 for Commercial Leasing for Wind Power on the Outer Continental Shelf in California, available at <https://www.regulations.gov/document/BOEM-2022-0017-0001>.

regulatory authority to incentivize compensatory fishing investments using bidding and operating fee credits, this would allow commercial and recreational fishermen to benefit from the promise of ocean wind to an extent that might not be possible if funding levels are solely based on projected impacts. Finally, funding through developer payments in exchange for BOEM credits would also make it easier for the third-party fund to beneficially repurpose unused funds, thereby avoiding the administrative and legal challenges involved in refunding developers if economic loss and gear loss claims fall short of BOEM’s baseline estimates of revenue exposure.

### **Bidding Credits and Operating Fee Credits Work Well Together**

As discussed further in ACP’s January 7, 2022 letter and noted above, we believe BOEM has the authority today to implement mechanisms to incentives the funding of a compensatory mitigation program through both lease auction bidding credits and operating fee credits. The two funding mechanisms would work well in tandem to ensure that sufficient money is available to satisfy valid claims and provide forward-looking grants, when that money is most likely to be needed.

We assume that to the extent offshore wind development has adverse effects on fishing, such effects will not commence until the start of offshore construction. We also assume that the effects of construction of the first two commercial-scale offshore wind projects—Vineyard Wind 1 and South Fork Wind Farm—will be addressed through the funds created for those projects and not through ACP’s proposed regional fund. Therefore, it is important that the regional compensatory mitigation program be in place and adequately funded by the time the next offshore wind projects commences offshore construction; this is likely to be 2024 based on current FAST-41 permitting dashboard timelines.

The next East Coast lease sale, in the Central Atlantic, is anticipated between Q2 and Q4 of 2023. A fisheries compensation bidding credit in this lease sale that comes from a portion of the initial lease auction proceeds would provide “seed money” into the regional compensatory mitigation program. Depending on the percentage bidding credit that BOEM decides to use, we believe lessee payments in exchange for such a credit could be more than sufficient to satisfy claims for the effects of early offshore construction.

We estimate that lessees would begin paying operating fees for post-Vineyard/South Fork projects starting in 2025, once the first of those projects is completed and begins commercial operations. At that point, lessees could begin making payments in return for credits against their regulatorily mandated 2% annual operating fees (which could be authorized through mutually agreed-to lease amendments at the time of COP approval) into the regional compensatory mitigation program. As more projects go online, the amount of operating fees owed by lessees to BOEM would increase—and so would operating fee credit payments into the compensation program. By combining both types of credits, the compensation program would be funded early enough to matter for potential

early fisheries effects of offshore wind construction and would also become sustainably funded in the long term.

### **BOEM Should Work to Develop The Funding Mechanism At The Same Time The Third-Party Fund Is Being Developed**

While a funding mechanism would need to be established separately from this guidance, they are not separate exercises. We urge BOEM to work with ACP and other stakeholders to develop the funding mechanism at the same time it coordinates with states, fisheries, and the offshore wind industry to ensure that the fund is appropriately structured and administered. First, a fund requires appropriate reserves to serve the need, funds that can be created through the use of a bidding credit in the Central Atlantic lease sale. Working out the details of how the funding mechanism will operate will take time and thoughtful policy. That process should start now so that the fund can be established with a funding plan already in place. Second, establishing the funding mechanism early will create fairness and predictability during the process of determining how the funds will be managed and distributed. For example, the exposure estimates during operations will be the most contentious part of both BOEM's guidance—and by extension the establishment of a compensation mechanism.

Third, the early establishment of a funding mechanism will have the added benefit of providing comfort to the fishing industry that money will always be available to satisfy valid claims. The success of the fisheries compensatory mitigation program will hinge on buy-in from all parties, and the most important aspect of that buy-in is trust in the efficacy of the process.

Finally, we believe that early attention to the funding mechanism will provide everyone with clear insight into whether the money into the fund will meet the anticipated purposes of the fund—and will allow for policy choices that grant flexibility in the event that predictions for claims and grants do not match actual usage. To that end, and as discussed further in the next section, ACP believes that to the extent the fund ends up with excess money, it should be able to be used beneficially for fishing industries through a grant program.

### **The Proposed Funding Mechanism Would Facilitate Grants For Adaptive Gear and Coastal Communities**

A further reason to have the fisheries compensatory mitigation program funded through payments credited from winning auction bids and operating fees is that it would likely result in surplus funds that could be used in forward-looking ways that benefit fishing industries. The ACP FWG's January 7, 2022 comments recommended that a third-party compensatory mitigation program could include:

- A fund to enhance fishermen's navigational safety through grants for radar and gear upgrades; and

- A coastal community fund that could provide grants to support those not eligible for direct compensation, such as dockside seafood processors.

We believe that such grants could enhance the ability of fishermen to continue to fish within offshore wind projects, thereby creating a virtuous cycle that would decrease the need for compensation for economic loss and freeing up more funds for further grants. The fund could even provide pilot grants for the adoption of innovative gear that would, in turn, mitigate impacts on biological resources such as protected species.

## Conclusion

We thank BOEM for their continued effort on this important topic. As the ACP FWG continues to advance efforts that support the coexistence of offshore wind with fisheries, it is helpful to capture best practices already underway and outline future possibilities in an accessible, common platform that is usable and helpful to both the fishing and offshore wind industries. This effort provides this opportunity. The ACP FWG looks forward to continued engagements with BOEM and fishing industries on this important effort.

Sincerely,

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**Attachment To:**

**Section 15 - Environmental Mitigation Plan**

**ATTACHMENT 15-1**

**REDACTED**



**Attachment To:**

**Section 15 - Environmental Mitigation Plan**

**ATTACHMENT 15-2**

**REDACTED**



**Attachment To:**

**Section 15 - Environmental Mitigation Plan**

**ATTACHMENT 15-3**

**REDACTED**

**Attachment To:**

**Section 16 - Stakeholder Engagement Plan**

**ATTACHMENT 16-1**

**REDACTED**



**Attachment To:**

**Section 16 - Stakeholder Engagement Plan**

**ATTACHMENT 16-2**

**REDACTED**

**Attachment To:**

**Section 16 - Stakeholder Engagement Plan**

**ATTACHMENT 16-3**

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**Attachment To:**

**Section 16 - Stakeholder Engagement Plan**

**ATTACHMENT 16-4**

**REDACTED**

**Attachment To:**

**Section 16 - Stakeholder Engagement Plan**

**ATTACHMENT 16-5**

**REDACTED**

**Attachment To:**

**Section 17 - Visibility and Viewshed Impacts**

**ATTACHMENT 17-1**

**REDACTED**

**Attachment To:**

**Section 17 - Visibility and Viewshed Impacts**

**ATTACHMENT 17-2**

**REDACTED**

**Attachment To:**

**Section 17 - Visibility and Viewshed Impacts**

**ATTACHMENT 17-3**

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**Attachment To:**

**Section 17 - Visibility and Viewshed Impacts**

**ATTACHMENT 17-4**

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**Attachment To:**

**Section 17 - Visibility and Viewshed Impacts**

**ATTACHMENT 17-5**

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**Attachment To:**

**Section 17 - Visibility and Viewshed Impacts**

**ATTACHMENT 17-6**

**REDACTED**

VINEYARD  OFFSHORE

**Attachment To:**

**Section 17 - Visibility and Viewshed Impacts**

**ATTACHMENT 17-7**

**REDACTED**

**Attachment To:**

**Section 17 - Visibility and Viewshed Impacts**

**ATTACHMENT 17-8**

**REDACTED**

**Attachment To:**

**Section 18 - Disadvantaged Community Impacts**

**ATTACHMENT 18-1**

**REDACTED**

**Attachment To:**

**Section 20 - Energy Storage**

**ATTACHMENT 20-1**

**REDACTED**

**Attachment To:**

**Section 20 - Energy Storage**

**ATTACHMENT 20-2**

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**Attachment To:**

**Section 20 - Energy Storage**

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**Section 20 - Energy Storage**

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