

Figure 1. Vicinity map¹

Location: East of Brothers Island, Casco Bay, Falmouth, Maine

Purpose: Experimental lease for suspended culture of American/eastern oysters (*Crassostrea virginica*)

Site Review: Cheyenne Adams, Marcy Nelson

Report Preparation: Molly Waters, Geoffrey Shook, Meryl Grady, and Amanda Ellis

¹ Unless otherwise noted, all figures in this report were created in ArcGIS Pro version 2.9 using digitized NOAA Nautical Charts or geo-referenced aerial photographs provided by The Maine Office of GIS.



Application Overview

The applicant, Thomas Martin, is requesting 0.15 acres for a commercial experimental lease in Casco Bay, east of Brothers Island for the suspended culture of American/Eastern oysters (*Crassostrea virginica*) (Figure 1). The applicant intends to seed, tend, and harvest the site May through October. The applicant intends to suspend gear in late spring through late fall and then either remove the gear or sink it to the bottom of the proposed site through early spring.²

General Characteristics

On July 7, 2022, Maine Department of Marine Resources (MDMR) scientists assessed the proposed lease area. MDMR scientists arrived on site at approximately 9:00 AM. The surrounding area is comprised of predominantly rocky shoreline, and a small patch of marsh, deciduous forest, and shrub uplands. The proposed lease area is located east of Brothers Island, which is undeveloped.

Depth

MDMR scientists began collecting depths at the proposed site at approximately 9:00 AM on July 7, 2022. The tide was ebbing with the next low tide predicted at 11:33 AM. Depths at each corner were measured and determined to be between 15.0 to 17.1 feet. Correcting for tidal variations derives water depths at the next high tide to be 24.0 to 26.1 feet and 12.5 to 14.6 feet at mean low water (MLW, 0.0 feet).

Table 1. Tide observations at Great Diamond Island, Casco Bay.³

Date	Time	Height (ft)
2022/07/07	05:20 AM	8.83 H
2022/07/07	11:33 AM	0.66 L
2022/07/07	5:53 PM	9.33 H

Bottom Characteristics

MDMR scientists observed the bottom characteristics of the proposed lease area via two underwater drop camera transects. Bottom characteristics were categorized using the Coastal and Marine Ecological Classification Standard (CMECS), a national standard for describing features of the marine environment (Table 2). Sediment information was determined based on visual analysis of the video. The bottom of the proposed lease area is composed of mud.

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³ <https://tides.net/maine/1063/?year=2022&month=7&day=7>



Table 2. Bottom characteristics of the proposed site.

Substrate Origin	Substrate Class	Substrate Subclass	Substrate Group
Geologic Substrate	Unconsolidated Mineral Substrate	Fine Unconsolidated Substrate	Mud

Position and Distances to Shore

The measuring tool in ArcGIS Pro 2.9 was used to verify the distances and bearings between proposed lease corners. Distances to shore were determined using the measuring tool in ArcGIS Pro 2.9, digital orthophotography provided by the Maine Office of GIS, and the application coordinates (Table 3).

Application Coordinates - 0.15 Acres

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>
NW	43.699151°	-70.213803° then 42.87 feet at 116° True to
NE	43.699103°	-70.213655° then 151.37 feet at 195° True to
SE	43.698700°	-70.213793° then 41.74 feet at 285° True to
SW	43.698725°	-70.213947° then 159.89 feet at 14° True to NW corner

Table 3. Approximate distances from proposed lease corners to surrounding features at MLW.

Feature	Distance
NE Corner to green navigational buoy "11"	~970 feet to northeast
NW Corner to Brothers Island shoreline	~300 feet to the west
SW Corner to Brothers Island shoreline	~315 feet to the west



Thomas Martin, East of Brothers Island, Casco Bay, Falmouth

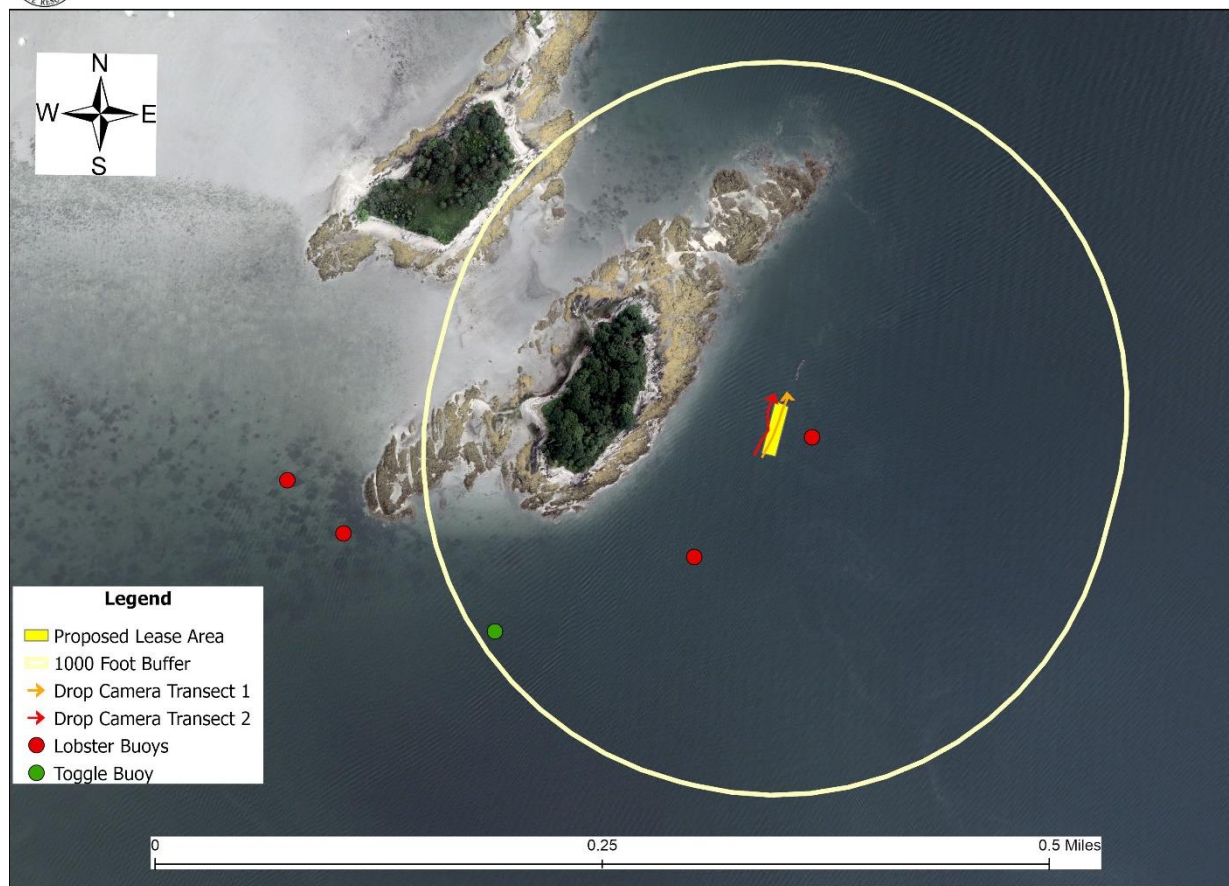


Figure 2. Proposed lease area with observed lobster buoys and approximate camera transects.

Pursuant to statute and regulation, aquaculture leases are evaluated in consideration of applicable decision criteria. The site report documents MDMR's observations of the area and other information, in consideration of those criteria, as noted below:

(1) Riparian Ingress and Egress

The proposed lease area is located east of Brothers Island, within Casco Bay, Falmouth. The proposed lease area is approximately 300 feet to the east of Brothers Island at MLW. Brothers Island is privately owned and uninhabited. During the site visit on July 7, 2022, MDMR scientists did not observe any docks or other infrastructure around the shoreline of Brothers Island. MDMR scientists observed two large piers with docks on the mainland in Falmouth, approximately 2,430 feet from the northwest corner of the proposed lease area.



(2) Navigation

During the site visit, MDMR scientists observed a small skiff and a work barge traveling within general proximity of the site towards Portland, which is southwest of the proposed lease area. MDMR scientists observed six boats in a small mooring field approximately 5,888 feet to the southeast along the shoreline of Diamond Island. The northeast corner of the proposed lease area is approximately 970 feet southwest of the green navigation aid “11”.

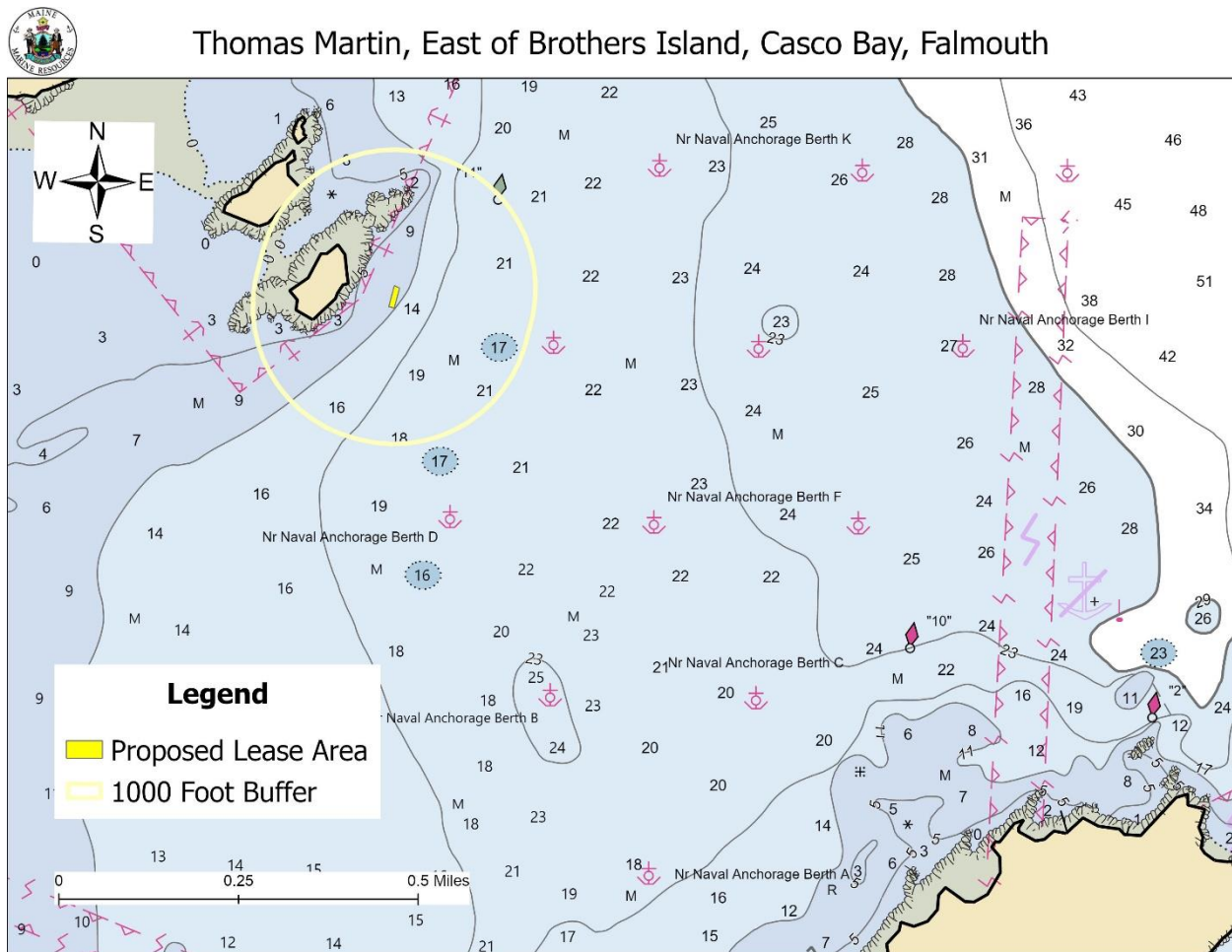


Figure 3. Navigation channels in the vicinity of Brothers Island, Casco Bay, Falmouth.



(3) Fishing and Other Uses

During the site visit conducted on July 7, 2022, MDMR scientists observed four lobster buoys. Two buoys were within 1,000 feet of the proposed lease area. One buoy was to the east of the proposal and one to the south. Two additional buoys were observed to the south of Brothers Island (Figure 2). MDMR scientists also observed two boats fishing for striped bass (*Morone saxatilis*). One recreational boat was to the north of the site casting near the ledges of Brothers Island and the other was observed south of Brothers Island.⁴

(4) Other Aquaculture Uses

There is one existing Limited Purpose Aquaculture site held by Thomas Martin (TMAR222) approximately 220 feet north of the proposed lease area.



Thomas Martin, East of Brothers Island, Casco Bay, Falmouth

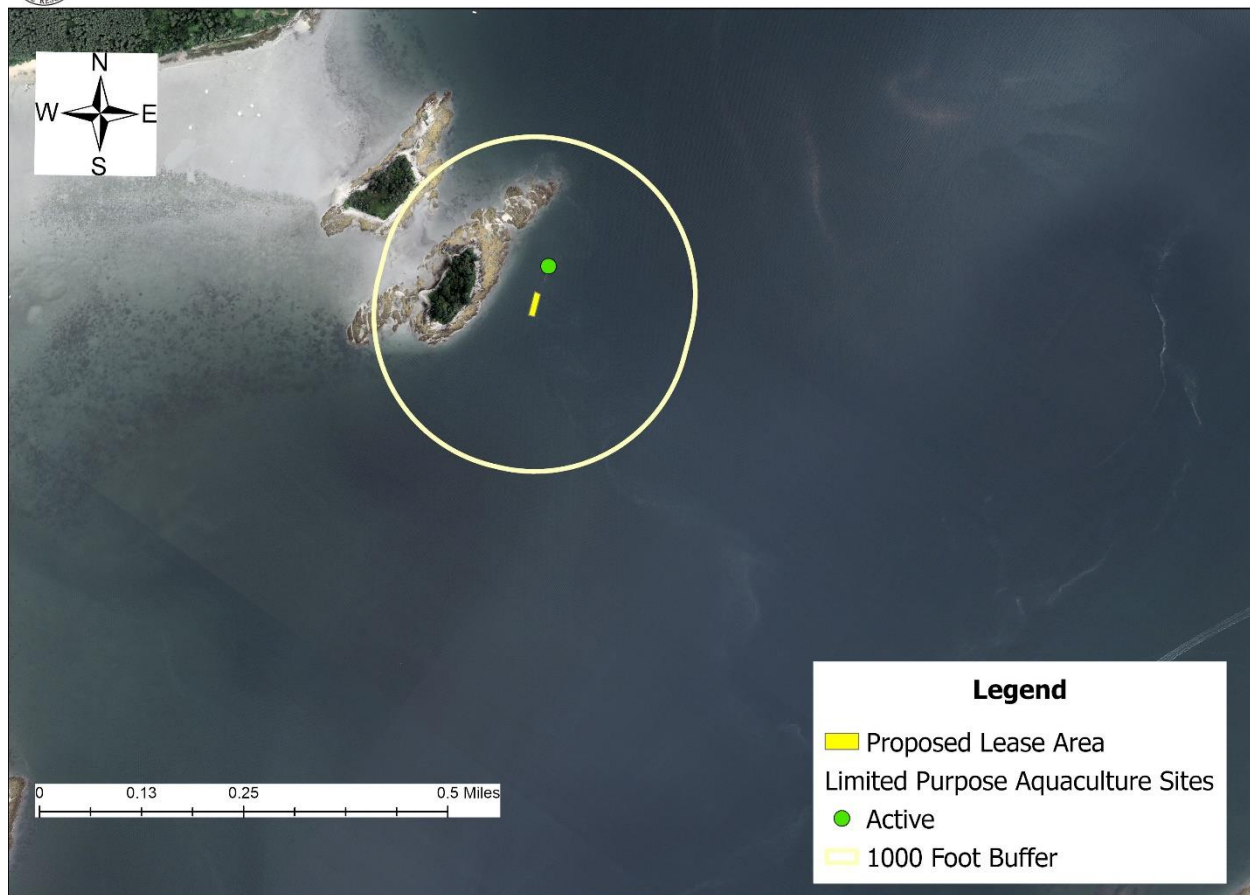


Figure 4. Existing aquaculture sites near the proposed lease area.

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(5) Existing System Support

Epibenthic Flora and Fauna

On July 7, 2022, MDMR scientists conducted two transects utilizing an underwater camera to assess the epibenthic ecology of the proposed lease. The video footage showed many lobster burrows, but no lobsters were observed during MDMR's site assessment.

Eelgrass (*Zostera marina*)

Data collected by The Maine Department of Environmental Protection (MDEP) and Casco Bay Estuary Partnership (CBEP) in 2022 indicates eelgrass presence west of the proposed lease (Figure 5). During MDMR's site assessment on July 7, 2022, drifting eelgrass was observed within the general vicinity of the proposed lease area. No eelgrass was observed attached to the seafloor within the proposed lease area during the underwater camera transects.



Thomas Martin, East of Brothers Island, Casco Bay, Falmouth

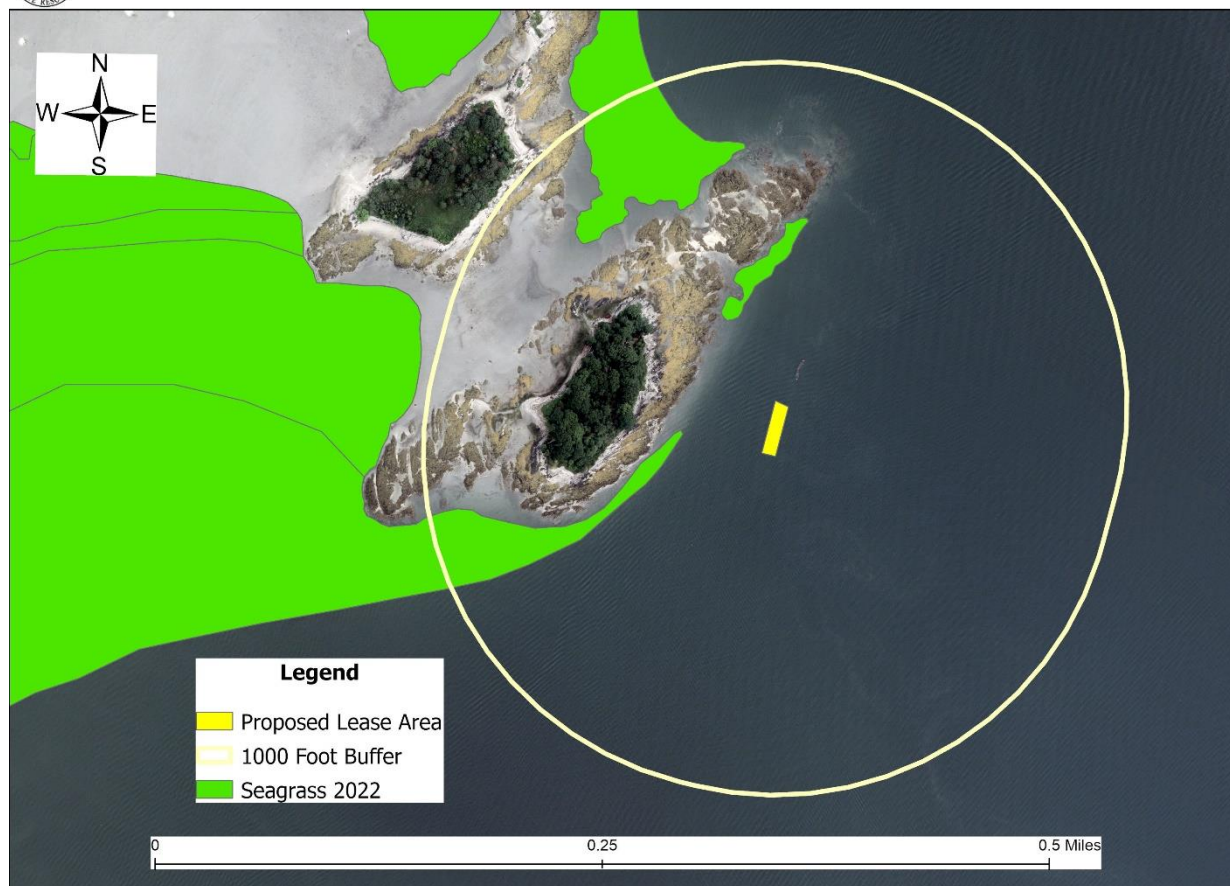


Figure 5. Mapped eelgrass (*Z. marina*) near the proposed lease utilizing 2022 data.⁵

Wildlife

During the site visit conducted on July 7, 2022, MDMR scientists observed an osprey flying within proximity of the proposed lease area as well as several gulls, eider ducks and two cormorants on the intertidal ledge of Brothers Island.

According to Geographic Information System (GIS) data maintained by the Maine Department of Inland Fisheries and Wildlife (MDIFW) and available through the Maine Office of GIS (MEGIS), the proposed lease is located within tidal waterfowl and wading bird habitat (Figure 6). There are no documented Bald Eagle nests within 1000 feet of the proposed lease area.

On March 21, 2022, a Wildlife Biologist with MDIFW responded by email to a “Request for Agency Review and Comment”, stating that they recommend the applicant moves the proposed lease

⁵ Data obtained from The Maine Office of GIS “Seagrass 2022”.



100 to 200 feet east or southeast so the lease area is located on the edge or just outside of the mapped tidal waterfowl and wading bird area. MDIFW also recommends activities within the intertidal zone be minimized to the extent practicable.⁶



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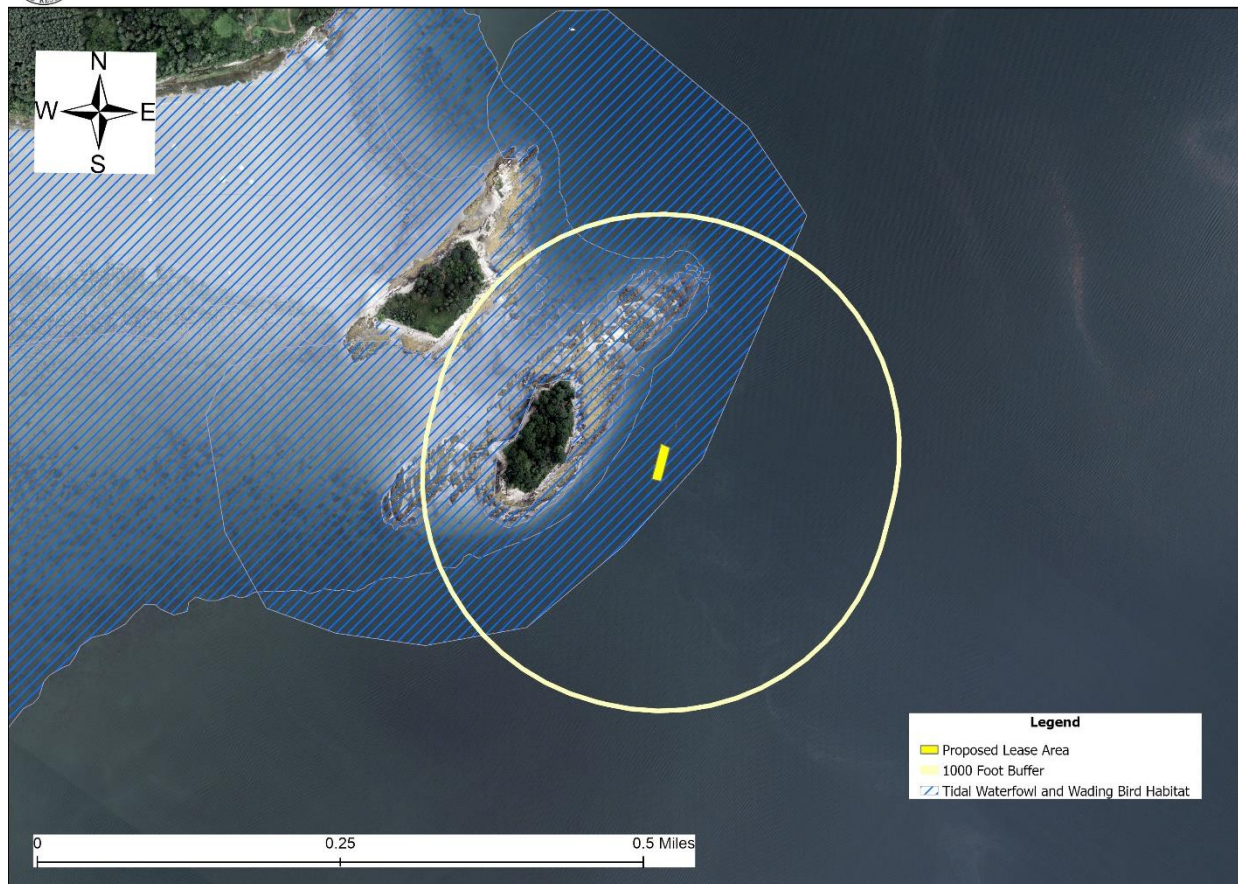


Figure 6. Mapped Tidal Waterfowl and Wading Bird Habitat⁷ in the vicinity of the proposed lease area.

Water Quality

The proposed lease area is currently classified as “Open/Approved” for the harvest of shellfish by the MDMR Bureau of Public Health and is approximately 13 feet to the north of a Prohibited area (Figure 7).

⁶ Email correspondence between MDIFW and MDMR

⁷ Data obtained from MDIWF maintained SDE Feature Class “GISVIEW.MEIFW.Twwh”



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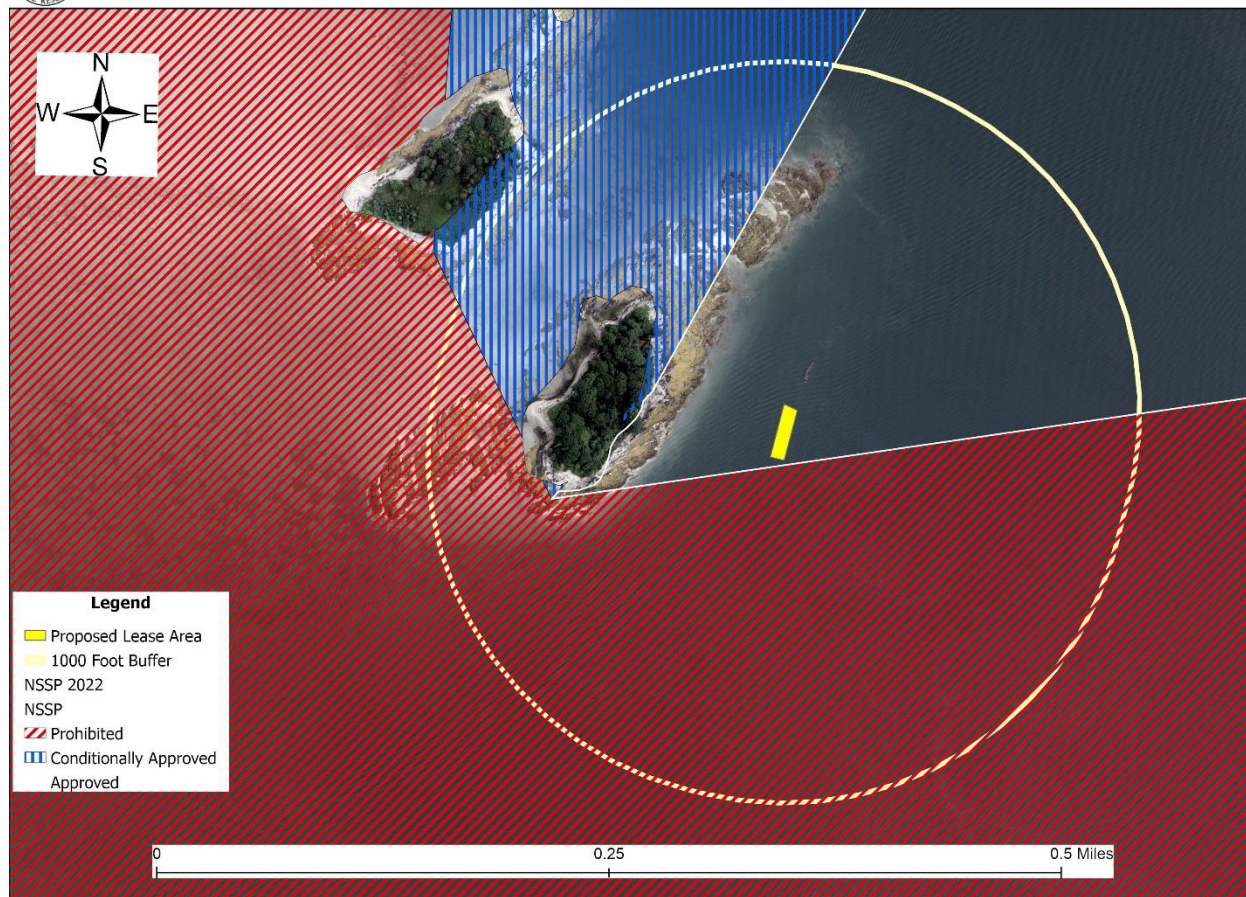


Figure 7. NSSP classifications within the vicinity of the proposal.⁸

⁸ Data obtained from The Maine Office of GIS "NSSP_2022"