

Figure 1. Vicinity map.¹

Location: West of Crab Island, Casco Bay, Freeport, Cumberland County, Maine

Purpose: Standard lease for suspended and bottom culture of American/Eastern Oysters (*Crassostrea virginica*), European Oysters (*Ostrea edulis*), Sea Scallops (*Placopecten magellanicus*) Quahogs (*Mercenaria mercenaria*), and Kelp (*Laminariales spp.*).

Site Review: Geoffrey Shook, Meryl Grady

Report Preparation: Geoffrey Shook, Meryl Grady, 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 georeferenced aerial photographs provided by The Maine Office of GIS.



Application Overview

The applicant, Kenneth Curtis Sparta, is requesting a 7.85² acre standard lease in Casco Bay west of Crab Island for the suspended and bottom culture of shellfish and kelp. Gear is intended to be onsite year-round with scallop lantern nets and floating oyster bags deployed onsite from spring to fall and kelp long lines deployed in the winter. No other structures, such as barges or sheds, will be located within the proposal area.³ The applicant currently operates two Limited Purpose Aquaculture (LPA) sites, KCSP319 and KCSP 419, within the boundaries of the proposal. These two LPAs would be relinquished if the proposal is approved.

General Characteristics

On August 10, 2023, Maine Department of Marine Resources (MDMR) scientists assessed the proposed lease site. MDMR scientists arrived on site at approximately 1:35 PM. The proposal is located in a shallow, subtidal embayment between Moshier Island, Crab Island, and Stockbridge Point on the mainland. A slightly deeper channel runs through the lease proposal and ends approximately 1,000 feet to the west (Figure 1). There is no land within 1,000 feet of the proposal. Moshier Island and Little Moshier Island to the south have a rocky shoreline with forested uplands. Crab Island, to the northeast, has a small beach on the western shore with the remainder of the shoreline consisting of rock ledges. Uplands are forested with an area of grass lawn around the house that is located on the interior of the island.

Depth

On August 10, 2023, MDMR scientists began collecting depths at the proposed site at approximately 1:35 PM. The tide was flooding with the next high tide predicted at 7:43 PM. Depths were determined to be between 5.6-9.1 feet at the corners of the proposal and 10.4-13.6 feet in the channel that runs through the middle of the proposal area. Correcting for tidal variations derives depths at mean low water (MLW, 0.0 feet) to be from 4.2-7.7 feet at corners of the proposal and 9-12.2 feet in the channel.

Table 1. Predicted tidal heights in Casco Bay, South Freeport, Maine.⁴

Date	Time	Height (ft)
2023/08/10	1:10 AM	0.5 L
2023/08/10	7:25 AM	8.3 H
2023/08/10	1:19 PM	1.4 L
2023/08/10	7:43 PM	9.5 H

² Applicant originally requested 8.25 acres. MDMR calculations indicate the area is 7.85 acres.

³ Application page 5,6

⁴ <https://www.ussharbons.com/harbor/maine/south-freeport-me/tides/?tide=2023-8#monthly-tide-chart>



Bottom Characteristics

MDMR scientists observed the bottom characteristics of the proposed lease site via a remotely operated vehicle (ROV). Three ROV dives were conducted within the proposal area. 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 lease site is primarily composed of mud and shell rubble.

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
Biogenic Substrate	Shell Substrate	Shell Rubble	Clam Rubble Oyster Rubble

Position and Distances to Shore

The geodesic 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, Figure 2).

Application Coordinates (WGS84) – 7.85 Acres

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	
1	43.793303°	-70.102338°	then 546.9 feet at 96° True to
2	43.793148°	-70.100278°	then 648.6 feet at 187° True to
3	43.791382°	-70.100578°	then 528.0 feet at 279° True to
4	43.791599°	-70.102555°	then 623.8 feet at 5° True to 1

Table 3. Approximate distances from proposed lease corners to surrounding features (Figure 3).

Feature	Distance
Corner 1 to Stockbridge Point closest point MLW	~3,610 feet to the northwest
Corner 2 to Crab Island closest point MLW	~1230 feet to the northeast
Corner 3 to green navigational aid “1”	~3,821 feet to the east
Corner 3 to Moshier Island closest point MLW	~1,600 feet to the southeast
Corner 4 to Little Moshier Island closest point MLW	~2,241 feet to the south-southwest

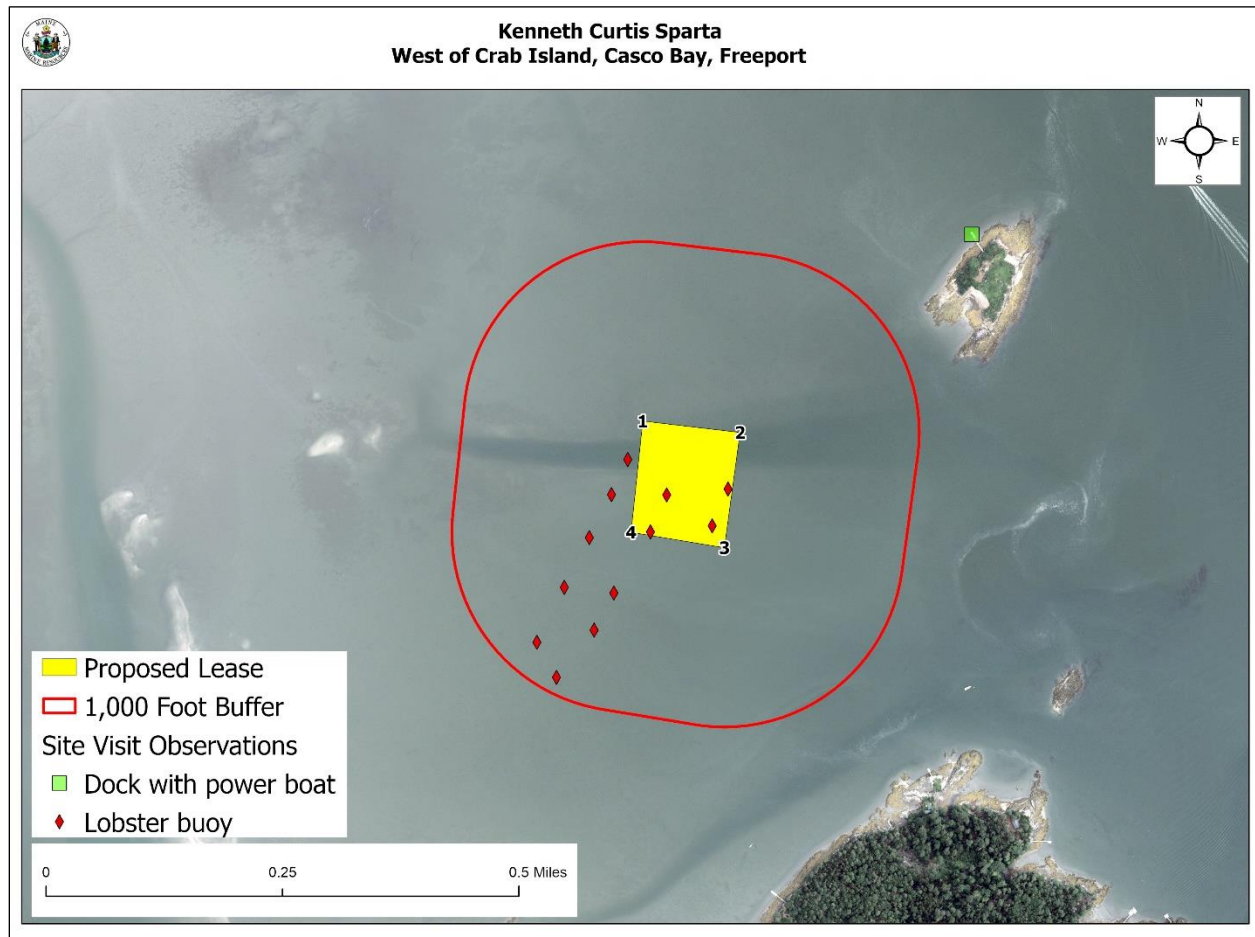


Figure 2. Proposed lease area with site visit observations.

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

There is no land within 1,000 feet of the proposal area. During MDMR’s site assessment, scientists observed a dock with a powerboat tied to it on the western side of Crab Island approximately 1,700 feet to the northeast. Based on aerial imagery⁵, there are approximately six docks on the northern end of Moshier Island. The closest of these docks is approximately 1,685 feet to the southwest (Figure 2).

⁵ Aerial imagery is from 2022 and is provided by The Maine Office of GIS



(2) Navigation

The proposal is located in a shallow embayment approximately 2,700 feet to the west and south of a marked navigational channel. Another marked channel is on the southwestern side of the embayment approximately 5,140 feet to the southwest of the proposal. According to navigational charts, an unmarked channel of deeper water runs through the northern portion of the proposal that ends approximately 1,000 feet to the west of the proposal. Navigation within the embayment is restricted for deeper draft vessels around mid and low tidal stages due to charted depths at MLW of 0.5-2 feet within much of the embayment (Figure 3).

During MDMR's site assessment, scientists observed several powerboats and sailboats transiting the marked navigational channel to the north of the proposal.

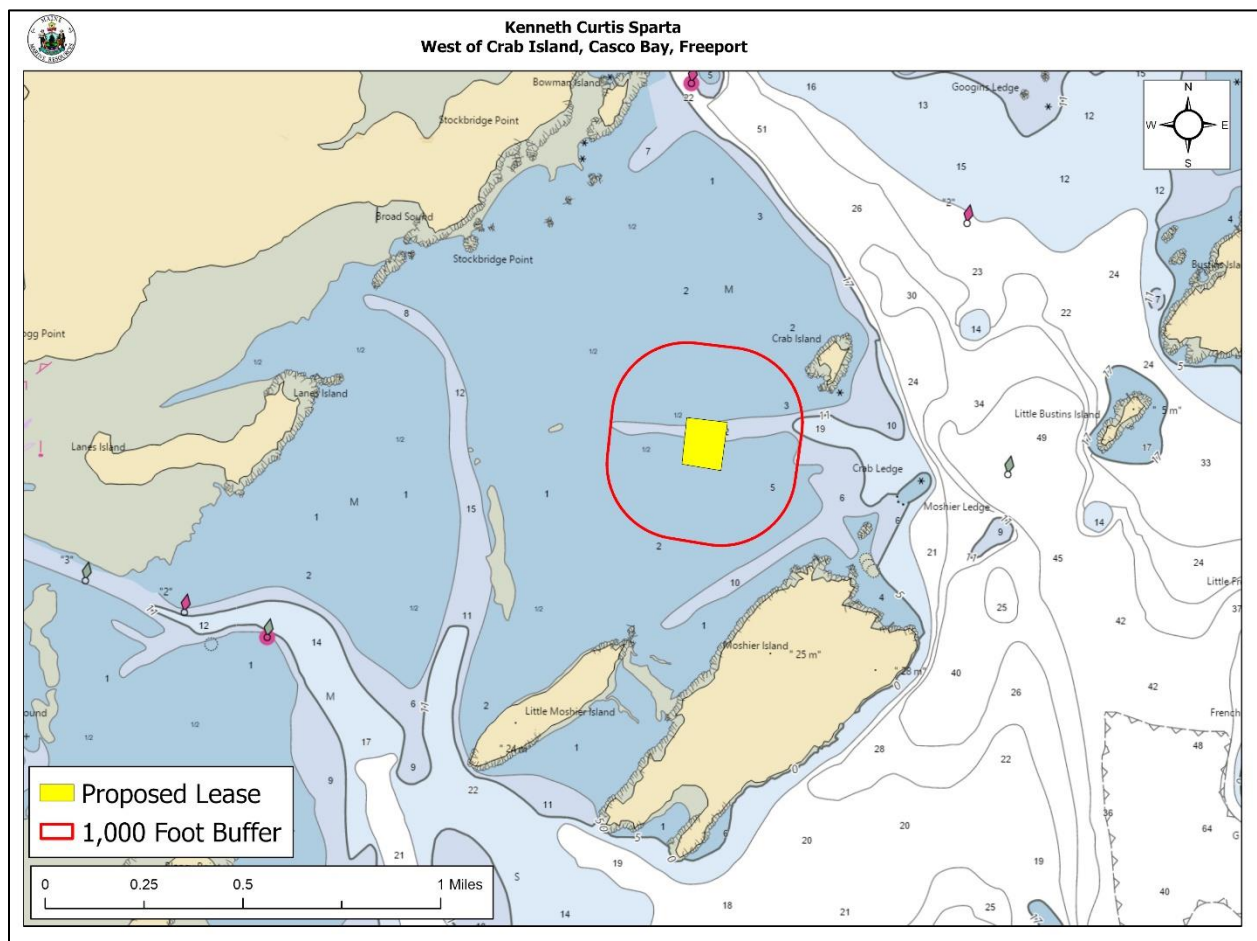


Figure 3. Navigational channels in the vicinity of the proposed lease area.



Maine Department of Marine Resources Site Report

Kenneth Curtis Sparta
Casco Bay
Freeport

(3) Fishing and Other Uses

During MDMR's site assessment, light lobstering was observed in the general vicinity of the proposal. There were four lobster buoys observed within the proposal area and eight more were observed within 1,000 feet of the proposal to the west and south (Figure 2).

On February 22, 2020, a scientist with the MDMR Nearshore Marine Resources Program responded by email to a "Request for Agency Review and Comment", indicating that intertidal wild harvest of softshell clams (*Mya arenaria*) should not be impacted due to the subtidal location of the proposal. The scientist also indicated that dragging for European oysters (*Ostrea edulis*) has occurred between Little Moshier and Moshier Islands, as well as around Bowman and Lanes Islands to the north of the proposal (Figure 3).



(4) Other Aquaculture Uses

There are two LPAs within 1,000 feet of the proposal, KCSP319 and KCSP419. These LPAs are held by the applicant and would be relinquished if the proposed lease is approved.⁶ The nearest aquaculture lease is approximately 1,375 feet to the east of the proposal (Figure 4).

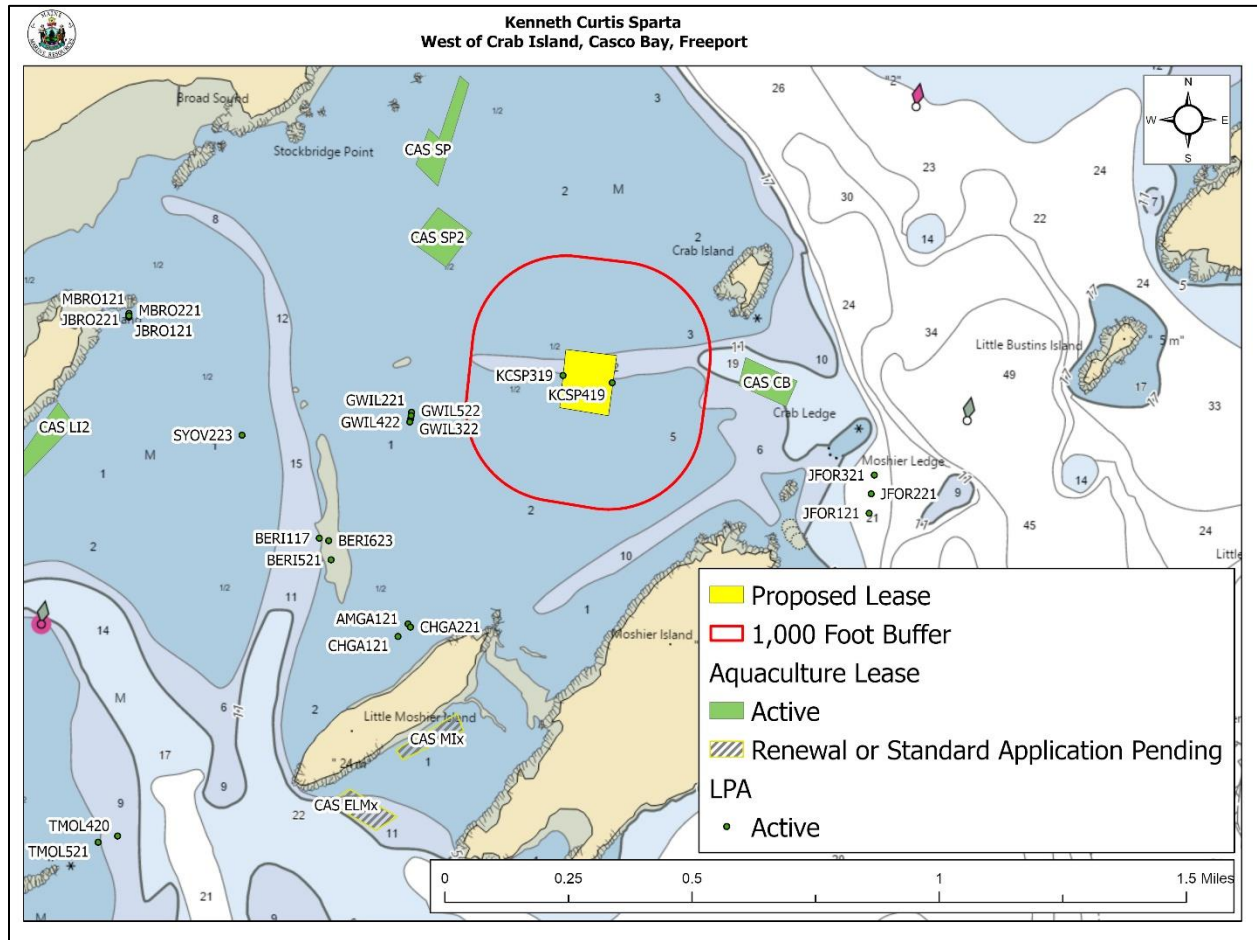


Figure 4. Aquaculture leases and LPA licenses in the vicinity of the proposed lease area.

⁶ Application page 11



(5) Existing System Support

Epibenthic Flora and Fauna

MDMR scientists conducted three dives using an ROV to assess the epibenthic ecology of the proposed lease. The relative abundance of epibenthic flora and fauna observed in the video transects is described below in Table 4.

Table 4. Species observed using underwater camera footage.

Species Observed	Abundance
Hermit Crab (<i>Paguroidea</i> spp)	Rare
American/Eastern Oyster (<i>Crassostrea virginica</i>)	Occasional
Filamentous red algae, possibly <i>Dasysiphonia japonica</i>	Occasional
European oyster (<i>Ostrea edulis</i>)	Occasional
Green crab (<i>Carcinus maenas</i>)	Occasional
Sand shrimp (<i>Crangon septemspinosa</i>)	Common



Eelgrass (*Zostera marina*)

Historical records of eelgrass collected in 2022⁷ indicate that there is no mapped eelgrass within 1,000 feet of the proposal. The nearest mapped eelgrass is approximately 2,169 feet to the southeast of the proposal. During MDMR’s site assessment, scientists observed sparse, individual blades of brown colored eelgrass attached to the seafloor. The unhealthy eelgrass was occasionally observed in the southeastern corner (corner 3) of the proposal. Near the middle of the proposal, eelgrass was rarely observed (Image 1).

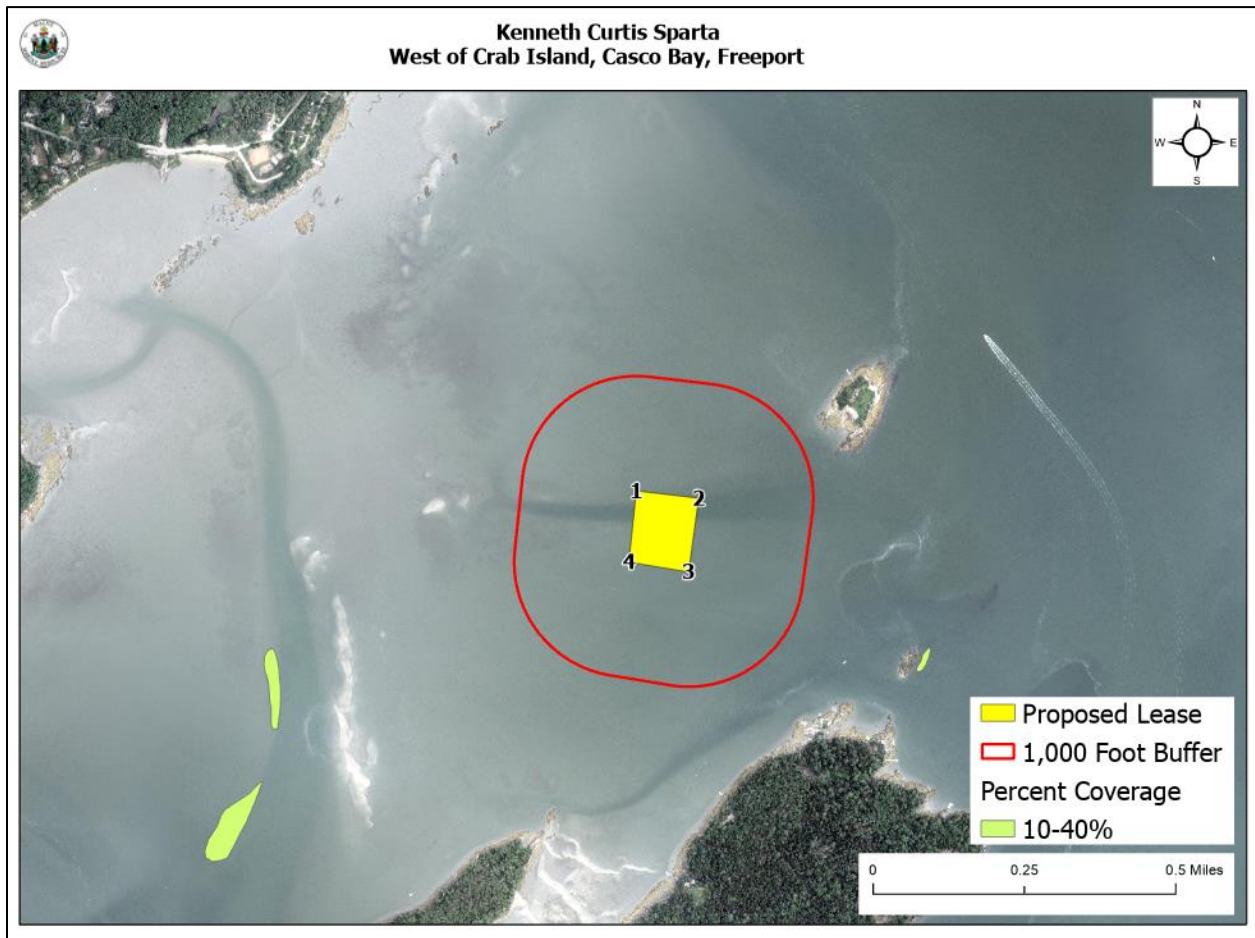


Figure 5. Mapped eelgrass (*Z. marina*) in the vicinity of the proposed lease area.

⁷ Data obtained from The Maine Office of GIS “GISVIEW.MEDEP.Seagrass2022”. Widgeon grass was observed only in the New Meadows River area off Old Brunswick Road near shore. Eelgrass was the dominant vascular species in all other locations. This is the most current record of mapped eelgrass within the vicinity of the proposal.



Wildlife

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 not within 1,000 feet of mapped tidal waterfowl and wading bird habitat. The nearest mapped waterfowl habitat is located approximately 1,247 feet to the west of the proposal. The nearest mapped bald eagle nest is located approximately 6,279 feet to the west of the proposal (Figure 6).

On March 22, 2022, a Wildlife Biologist with MDIFW responded by email to a “Request for Agency Review and Comment”, stating that minimal impacts to wildlife are anticipated.

During MDMR’s site assessment, scientists observed double-crested cormorants (*Nannopterum auritum*), common terns (*Sterna hirundo*), herring gulls (*Larus argentatus*), a loon (*Gavia immer*), and an osprey (*Pandion haliaetus*) in the vicinity of the proposed lease.

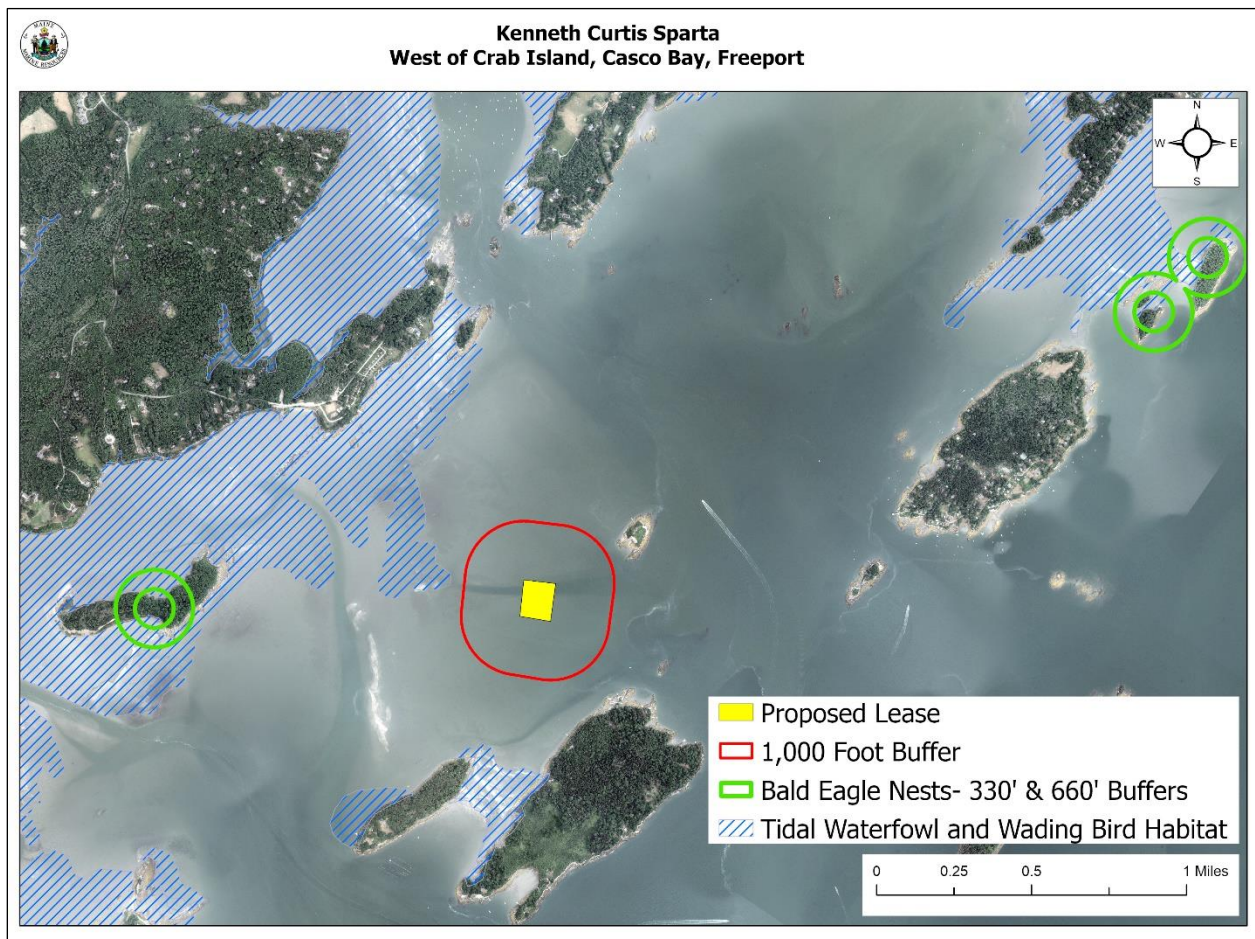


Figure 6. Mapped bald eagle nests and tidal waterfowl and wading bird habitat. ⁸

⁸ Data obtained from USFWS “Bald_Eagle_Nests_-_Maine_2023” and MDIFW maintained SDE Feature Class “GISVIEW.MEIFW.Twwh”



(6) Interference with Public Facilities

The proposed lease is not within 1,000 feet of any beach, park, docking facility, or conserved lands owned by federal, state, or municipal governments (Figure 7).

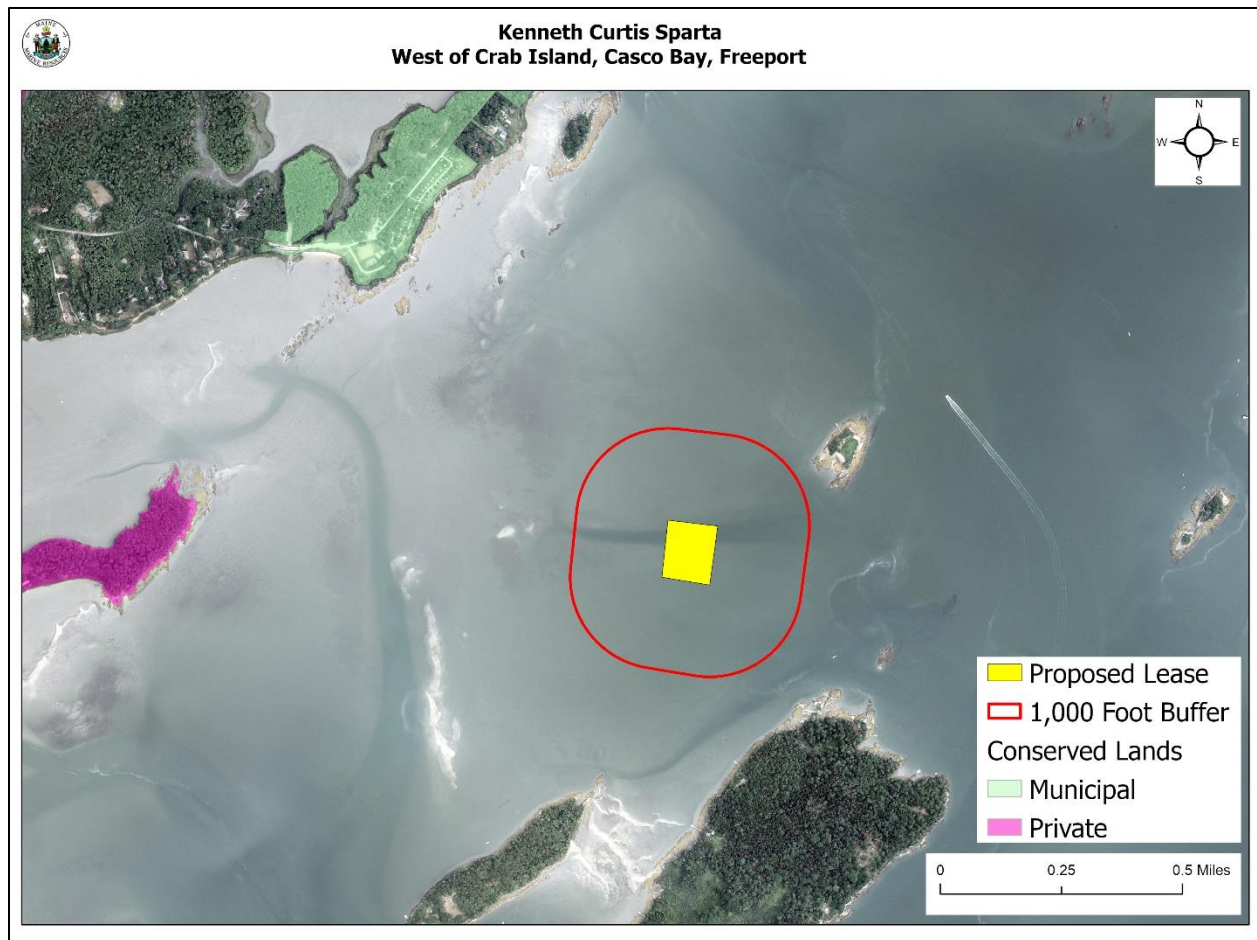


Figure 7. Public facilities near the proposed lease site.⁹

(7) Water Quality

The proposed lease is located within an area that is currently classified as Open/Approved for the harvest of shellfish by the MDMR Bureau of Public Health and Aquaculture.

⁹ Data obtained from The Maine Office of GIS "GISVIEW.MECONSLANDS.Conserved_Lands"