

Figure 1. Vicinity map.¹

Location: Bottle Cove, Boothbay Harbor, Lincoln County, Maine

Purpose: Standard lease for suspended culture of American/Eastern oyster (*Crassostrea virginica*).

Site Review: Geoffrey Shook, Molly Waters

Report Preparation: Geoffrey Shook, Meryl Grady

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.



Department of Marine Resources Site Report

Carlton Yentsch
Bottle Cove
Boothbay Harbor

Application Overview

The applicant, Carlton Yentsch, is requesting a 1.11-acre² standard lease in Bottle Cove, in Boothbay Harbor, for the suspended culture of shellfish. Oyster cages and mesh bags are intended to be on site year-round and an upweller is intended to be on site in the spring and summer.³ There are two existing piers and docks located within the proposal boundaries. The southern dock is owned by the applicant and would be used for aquaculture operations. The northern dock is owned by the applicant's brother and would not be used for aquaculture operations.⁴ The applicant currently operates three limited purpose aquaculture (LPA) sites within the boundaries of the proposal (YENT111, YENT323, YENT423) and is listed as an assistant on one LPA located within the boundaries of the proposal (CYEN112). YENT111 and CYEN112 would be relinquished if the proposal is granted.⁵ LPAs YENT323 and YENT423 were licensed after the standard lease application was deemed complete on October 5, 2022 and are not referenced in the application.

General Characteristics

On August 22, 2023, Maine Department of Marine Resources (MDMR) scientists assessed the proposed lease site. MDMR scientists arrived on site at approximately 8:59 AM. The proposal is located on the eastern side of Bottle Cove in Boothbay Harbor in between Indiantown Island to the west and the Boothbay Harbor mainland to the east. There is a residential waterfront neighborhood along the eastern shore of the cove with approximately 12-14 houses and 8-10 docks within 1,000 feet of the proposal. The shoreline consists of exposed ledges covered with rockweed. The uplands are residential with a combination of yards and fields, as well as areas of mixed forest. Indiantown Island to the west has a shoreline that consists of exposed ledges and rockweed with forested uplands. There is one residence on Indiantown Island located on southwestern side of the island approximately 1,235 feet to the west of the proposal.

Depth

On August 22, 2023, scientists began collecting depths at the proposed site just after low tide at approximately 9:33 AM. The tide was flooding with the next high tide predicted at 3:34 PM (Table 1). Depths were determined to be between 0-12.1 feet. Correcting for tidal variations derives depths at mean low water (MLW, 0.0 feet) to be between 0-11.2 feet. At the time of the site visit, corner one and corner two were observed to be intertidal, as well as areas along the eastern boundary of the proposal.

² Applicant originally requested 1.12 acres. MDMR calculations indicate the area is 1.11 acres.

³ Application page 6

⁴ Application page 12

⁵ Application pages 16 and 28



Table 1. Predicted tidal heights in Boothbay Harbor, Maine.⁶

Date	Time	Height (ft)
2023/08/22	3:14 AM	8.5 H
2023/08/22	9:18 AM	0.9 L
2023/08/22	3:34 PM	8.9 H
2023/08/22	9:48 PM	0.9 L

Bottom Characteristics

MDMR scientists observed the bottom characteristics of the proposed lease site via a remotely operated vehicle (ROV). 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 with patches of shell rubble and areas of muddy bottom covered by an algal mat substrate.

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	Mussel Rubble
Biogenic Substrate	Algal Substrate	Not Identified	Not Identified

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).

⁶ <https://www.usharbors.com/harbor/maine/boothbay-harbor-me/tides/?tide=2023-08#monthly-tide-chart>



Application Coordinates (WGS84) – 1.11 Acres

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	
1	43.858056°	-69.663856°	then 401.0 feet at 180° True to
2	43.856956°	-69.663856°	then 164.6 feet at 270° True to
3	43.856956°	-69.664480°	then 225.7 feet at 0° True to
4	43.857575°	-69.664480°	then 53.8 feet at 90° True to
5	43.857575°	-69.664276°	then 103.3 feet at 35° True to
6	43.857801°	-69.664040°	then 93.0 feet at 0° True to
7	43.858056°	-69.664040°	then 48.5 feet at 90° True to 1

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

Feature	Distance
Corner 1 to charted Boothbay Harbor shoreline MLW	~23.8 feet to the east
Corner 2 to charted Boothbay Harbor shoreline MLW	~61.2 feet to the northeast
Corner 3 to Indiantown Island MLW	~253.2 feet to the west
Corner 4 to mid-channel ledge MLW	~128.1 feet to the west
Corner 5 to intertidal ledge MLW	~12.6 feet to the northwest
Corner 3 to Townsend Gut red nav aid "6"	~2,228.8 feet to the southwest

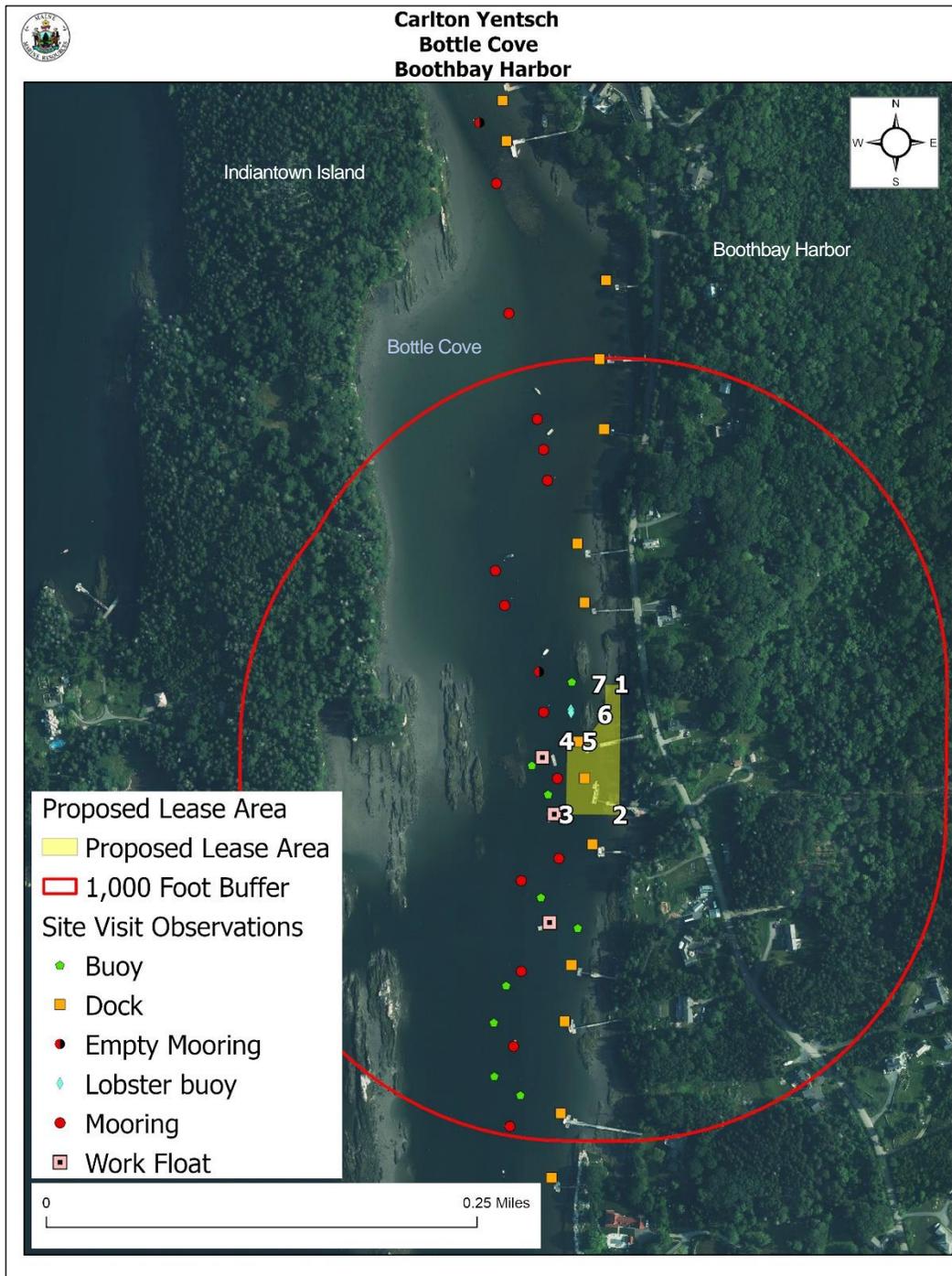


Figure 2. Proposed lease area with site visit observations.

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

During MDMR's site assessment, scientists observed a residential area along the eastern shore of Bottle Cove on the Boothbay Harbor mainland. There were approximately twelve houses and ten piers with docks observed within 1,000 feet of the proposal, including two piers with docks within the proposal boundaries. Scientists also observed 13 moorings within 1,000 feet of the proposal. Occupied moorings were observed to have a variety of small powerboats and sailboats attached to them. Three moorings were observed to be unoccupied at the time of the site assessment. The mooring nearest to the proposal is approximately 27.7 feet to the west. The observed moorings were generally located along a channel of deeper water that runs through Bottle Cove. The proposal is located east and inshore of the access channel and all observed moorings. In addition to moorings, scientists observed three swim or work floats within 1,000 feet of the proposal (Figure 2).

Two piers with docks were observed within the boundaries of the proposed lease. According to the lease application, the southern dock is owned by the applicant. The northern dock is owned by the applicant's brother who submitted written permission for his dock and pier to be within the boundaries of the proposed lease. The northern pier and dock would not be used for aquaculture operations.⁷

Due to the intertidal location of the proposal, the applicant is required to obtain written consent from the upland owner(s) for use of their intertidal land. However, the applicant is listed as the owner of the parcel (028-001) that contains the intertidal areas of the proposal.

In a completed Harbormaster Questionnaire submitted to MDMR on November 1, 2022, it was indicated that riparian ingress and egress should not be affected.

(2) Navigation

The proposal is located in shallow, partially intertidal waters on the eastern side of Bottle Cove in Boothbay Harbor. There is a channel of deeper water charted approximately 7 feet to the west of the proposal boundary. This channel allows access to the northern end of the cove and is approximately 128.1 feet wide in the immediate vicinity of the proposal. An area of intertidal ledge approximately 12.6 feet to the north and west of the proposal partially separates the proposal from the access channel (Figure 1). At the time of MDMR's site assessment, there were seven docks and ten moorings observed to the north of the proposal in the cove (Figure 2).

At the southern entrance of Bottle Cove is the Townsend Gut. The Townsend Gut is a heavily used channel between the Boothbay Harbor mainland and Southport Island that connects

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Boothbay Harbor to the Sheepscot River. The proposal is located approximately 2,228.8 feet to the north of the Townsend Gut (Figure 3). During MDMR's site assessment, scientists observed two kayakers operating to the west of the proposed lease area.

In the Harbormaster Questionnaire, it was indicated that navigation should not be affected by the proposed lease.

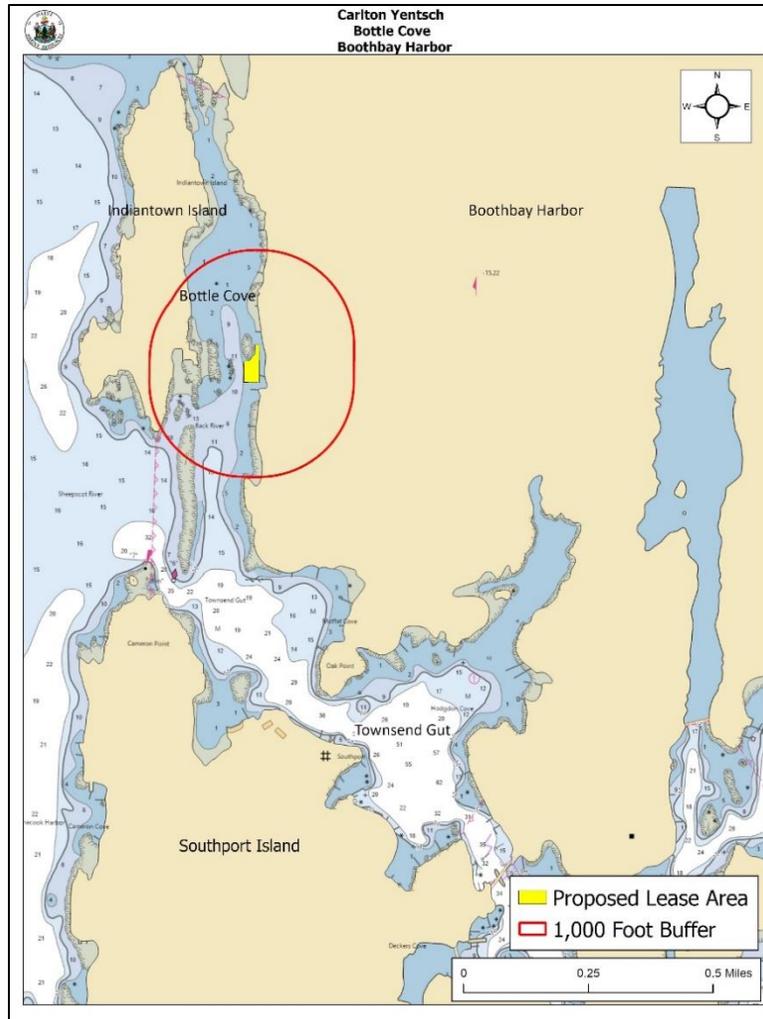


Figure 3. Charted navigational channels in the vicinity of the proposed lease area.

(3) Fishing and Other Uses



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During MDMR's site assessment, scientists observed light lobstering activity within the vicinity of the proposal. Two lobster buoys were observed within 1,000 feet of the proposal, as well as approximately nine other unidentified buoys. The lobster buoy nearest to the site was located approximately 85.6 feet to the north and west of the proposal (Figure 2).

In the Harbormaster Questionnaire, it was indicated that no commercial fishing occurs within the area of the proposal and that there is a small amount of recreational fishing for striped bass (*Morone saxatilis*).

The Town of Boothbay Harbor has a shellfish conservation program in accordance with 12 M.R.S.A. § 6671 and because the site is partially located within the intertidal, the applicant is required to obtain consent from the municipality. The applicant did not provide this permission with the application.

(4) Other Aquaculture Uses

There are no active aquaculture leases within 1,000 feet of the proposal. There are four LPAs located within the boundaries of the proposal (Figure 4). The applicant is the license holder for three of the LPAs (YENT111, YENT323, YENT423) and is listed as an assistant on the fourth LPA located within the boundaries of the proposal (CYEN112). YENT111 and CYEN112 would be relinquished if the proposal is granted.⁸ LPAs YENT323 and YENT423 were licensed after the standard lease application was deemed complete on October 5, 2022, and are not referenced in the application.

⁸ Application page 28

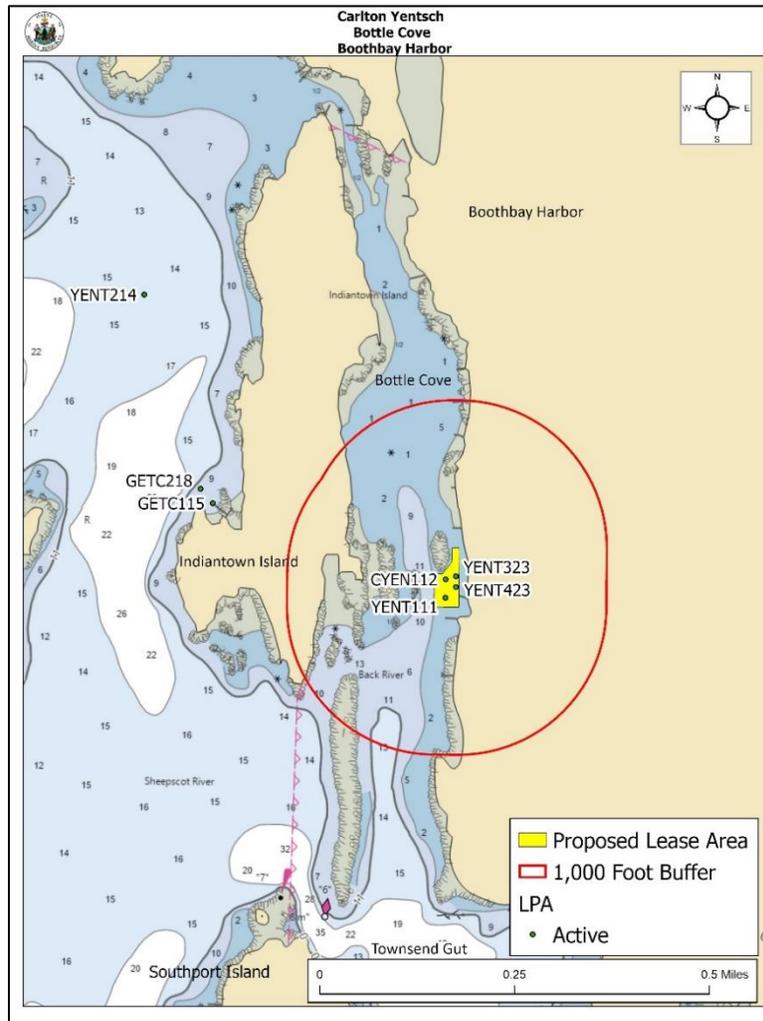


Figure 4. Aquaculture LPA licenses in the vicinity of the proposed lease area.

(5) Existing System Support

Epibenthic Flora and Fauna

MDMR scientists utilized a remotely operated vehicle (ROV) to assess the epibenthic ecology of the proposed lease. The relative abundance of epibenthic flora and fauna observed is described below in Table 4.

Table 4. Species observed using underwater camera footage.

Species Observed	Abundance
Green crab (<i>Carcinus maenas</i>)	Common
American/Eastern Oyster (<i>Crassostrea virginica</i>)	Occasional
Rockweed (<i>Ascophyllum nodosum</i>)	Common
Bladderwrack (<i>Fucus vesiculosus</i>)	Common



Species Observed	Abundance
Sand shrimp (<i>Crangon septemspinosa</i>)	Common
Tunicates (<i>Didemnum vexillum</i> , <i>Ciona intestinalis</i>)	Occasional
Blue mussels (<i>Mytilus edulis</i>)	Occasional

Eelgrass (*Zostera marina*)

Records of seagrass collected in 2023⁹ indicate that there is not mapped eelgrass within 1,000 feet of the proposal. The nearest mapped eelgrass is approximately 2,639.3 feet to the west of the proposal. During MDMR’s site assessment, scientists did not observe any eelgrass.

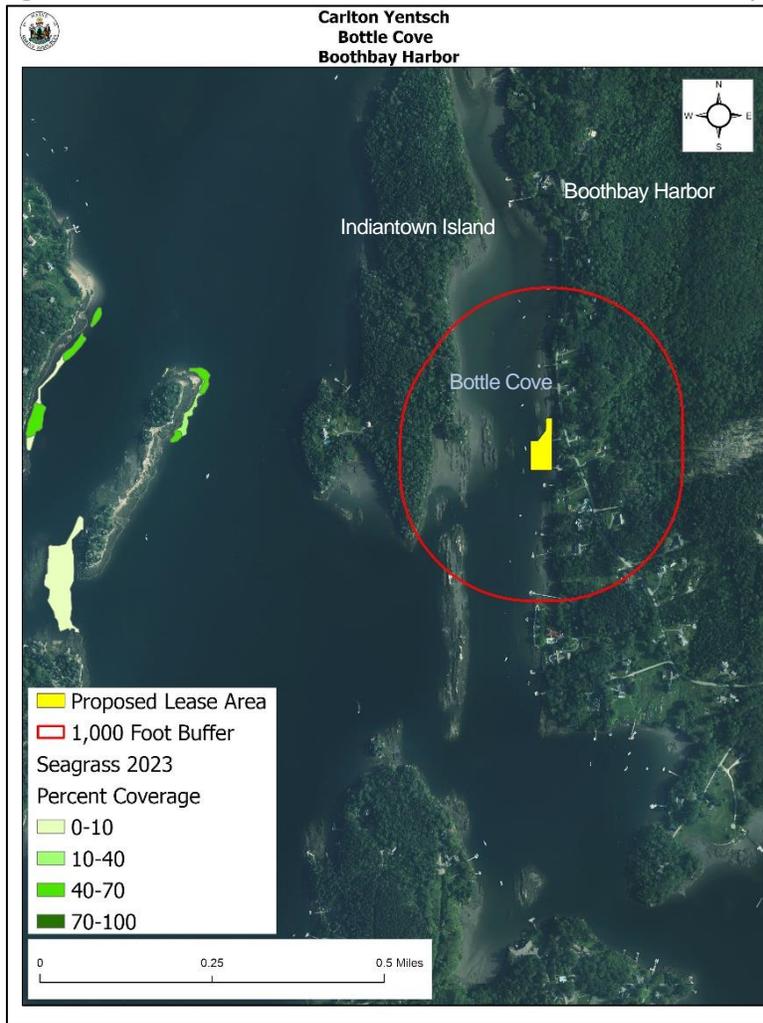


Figure 5. Mapped eelgrass in the vicinity of the proposed lease area.

⁹ Seagrass 2023 – (Phippsburg to Port Clyde): Data obtained from The Maine Office of GIS “GISVIEW.MEDEP.Seagrass2023”. Widgeon grass was observed only in a tributary to the Great Salt Bay, upstream of a culvert that likely restricts tidal flow. 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.



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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), there is not mapped Tidal Waterfowl and Wading Bird Habitat (TWWH) within 1,000 feet of the proposal (Figure 6). The nearest TWWH is approximately 3,273.9 feet to the southeast of the proposal. The nearest mapped bald eagle (*Haliaeetus leucocephalus*) nest is located approximately 1.23 miles to the southwest of the proposal.

On October 28, 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*), herring gulls (*Larus argentatus*), osprey (*Pandion haliaetus*), a kingfisher (*Alcedinidae* sp.), great blue heron (*Ardea herodias*), and an unidentified duck species (*Anatidae*) in the vicinity of the proposal.

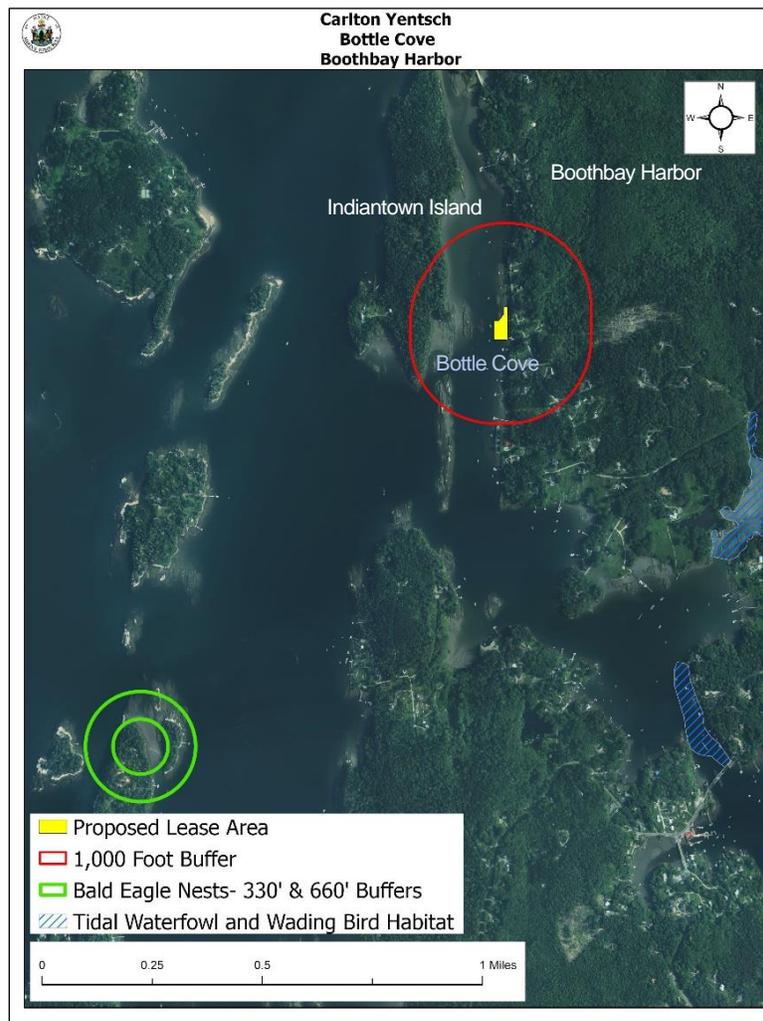


Figure 6. Mapped Tidal Waterfowl and Wading Bird Habitat. ¹⁰

¹⁰ 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, or docking facility owned by federal, state, or municipal governments. There is state owned conserved land within 1,000 feet of the proposal. A small area of ledges located approximately 684.3 feet to the southwest of the proposal is designated as a coastal island and is owned by the Maine Bureau of Parks and Lands.

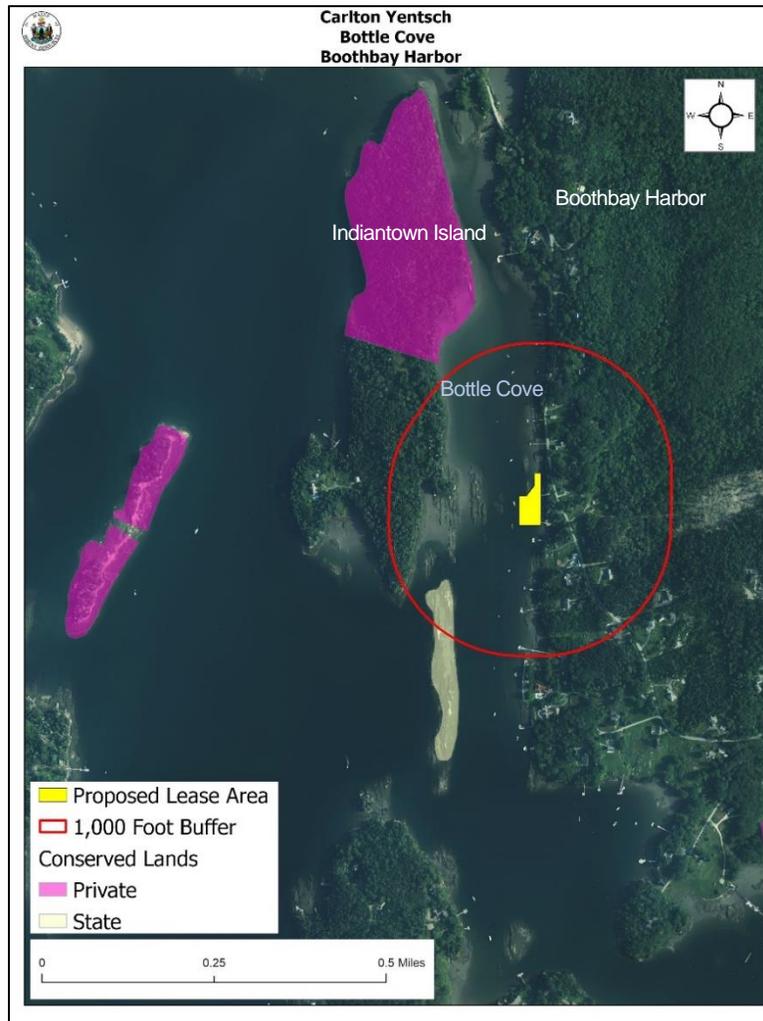


Figure 7. Public facilities near the proposed lease site.

(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.



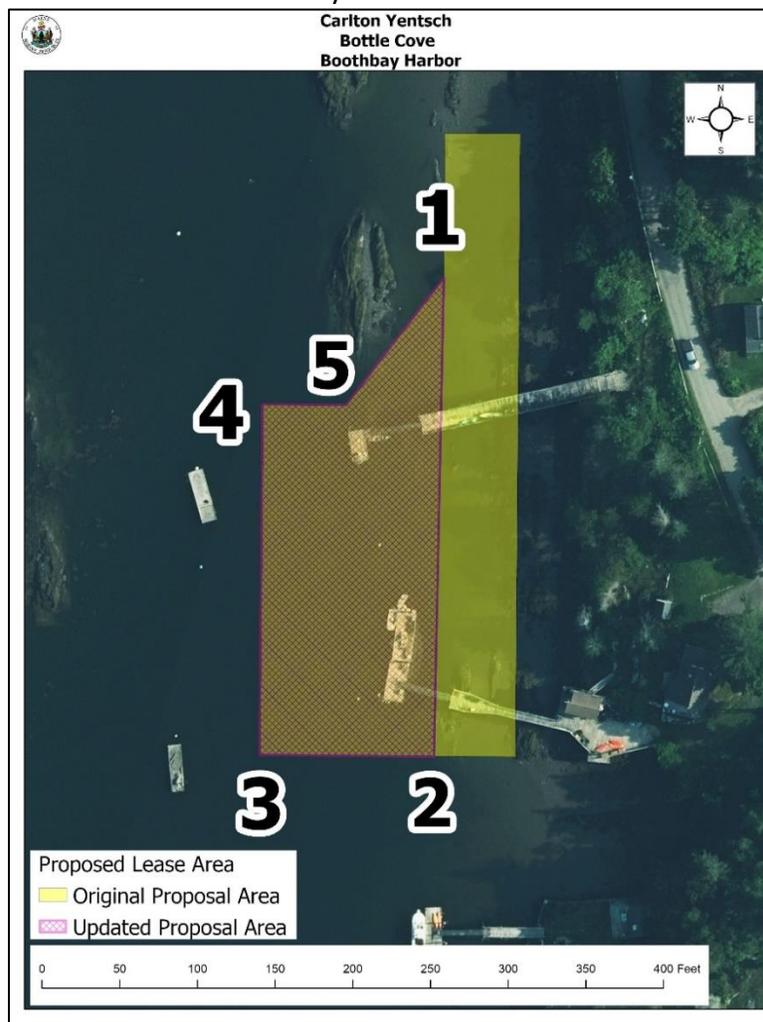
Intertidal Site

Given the charted depths at MLW, MDMR scientists visited the proposed lease site at low tide to help assess whether any portion of the site was intertidal. It was determined that corner one and corner two are in the intertidal, as well as areas along the eastern boundary of the proposal.

Proposed intertidal sites have certain permission requirements. Written permission from the upland landowner(s) to use the intertidal area is required. However, the applicant is listed as the owner of the parcel (028-001) that contains the intertidal areas of the proposal.

In addition, the Town of Boothbay Harbor has a shellfish conservation program in accordance with 12 M.R.S.A. §6671. Therefore, in accordance with 12 M.R.S.A. §6072(3), the applicant would also need to obtain consent from municipal officers within the Town of Boothbay Harbor.

Figure 8 depicts the original proposal overlaid with updated coordinates generated by MDMR scientists for the lease to be located entirely within subtidal waters.





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Figure 8. The original proposal overlaid with updated coordinates for the lease to be located entirely within subtidal waters.

Updated Proposal Coordinates (WGS84) – 0.65 Acres

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	
1	43.857801°	-69.664040°	then 308.3 feet at 180° True to
2	43.856956	-69.664040°	then 112.2 feet at 270° True to
3	43.856956°	-69.664480°	then 225.7 feet at 0° True to
4	43.857575°	-69.664480°	then 53.8 feet at 90° True to
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