

Figure 1: Proposed lease area¹

Location: Clark Cove, Damariscotta River, South Bristol, Lincoln County, Maine

Purpose: Standard lease for the suspended culture of seaweeds (*Saccharina latissima*, *Laminaria angustissima*, *Alaria esculenta*, *Laminaria digitata*, *Agarum cribrosum*, *Palmaria palmata*, *Porphyra umbilicalis*, *Chondrus crispus*, *Ulva lactuca*, *Gracilaria tikvahiae*, *Chorda tomentosa*, *Agardhiella tenera*, *Desmarestia viridis*, *Scytosiphon lomentaria*, and *Petalonia fascia*).

Site Review by: Marcy Nelson, Flora Drury, and Cheyenne Adams

Report Preparation by: Cheyenne Adams, Flora Drury, and Marcy Nelson

Report Completed: April 12, 2022

¹ All figures in this report were created in ArcMap version 10.8 using digitized NOAA Nautical Charts or geo-referenced aerial photographs provided by The Maine Office of GIS (orthoCoastalCentralCoast2003and2005).

Application Overview

The applicant is requesting 3.58² acres for the suspended culture of various species of seaweeds in subtidal waters in the center of Clark Cove. The proposed standard lease, if granted, would replace the applicant's existing experimental lease, DAM CC3x. A total of 15 horizontal longlines measuring up to 500 feet in length would be deployed 3-6 feet below the surface of the water. The 7 southwestern longlines are proposed to span between the proposed lease and the existing lease DAM CC2 to the southeast. The longlines would be spaced approximately 28 feet apart. The remaining 8 proposed longlines would be contained entirely within the northeastern portion of the proposed lease area. A total of 31 depth-control buoys and 23 mooring balls would be deployed at the site. Several of the proposed algae species requested would be cultured year-round.

General Characteristics

On July 6, 2021, Maine Department of Marine Resources (MDMR) Scientists Marcy Nelson, Flora Drury, and Cheyenne Adams visited the proposed aquaculture lease site. MDMR staff arrived on site at approximately 11:00am; the tide was slack low at this time. The proposed lease occupies the same footprint as the existing experimental lease DAM CC3x, which is held by the applicant, and abuts the northwest boundaries of existing lease DAM CC2, held by Damariscove Seafood, LLC (Figure 2). Upland characteristics consist of a rocky shoreline leading to mixed forest and grassy fields (Image 1). Multiple houses are present along the shoreline of Clark Cove, within 1,000 feet of the proposed lease site, and others located at greater distances are visible from the proposed site (Image 1). Clark Cove is used for both commercial and recreational purposes. Aquaculture gear was present within the existing leases DAM CC2 and DAM CC3x at the time of MDMR's site assessment on July 6, 2021 (Image 3).

² The existing lease DAM CC3x is 3.62 acres, but the coordinates provided in the application encompass 3.58 acres, according to MDMR calculations

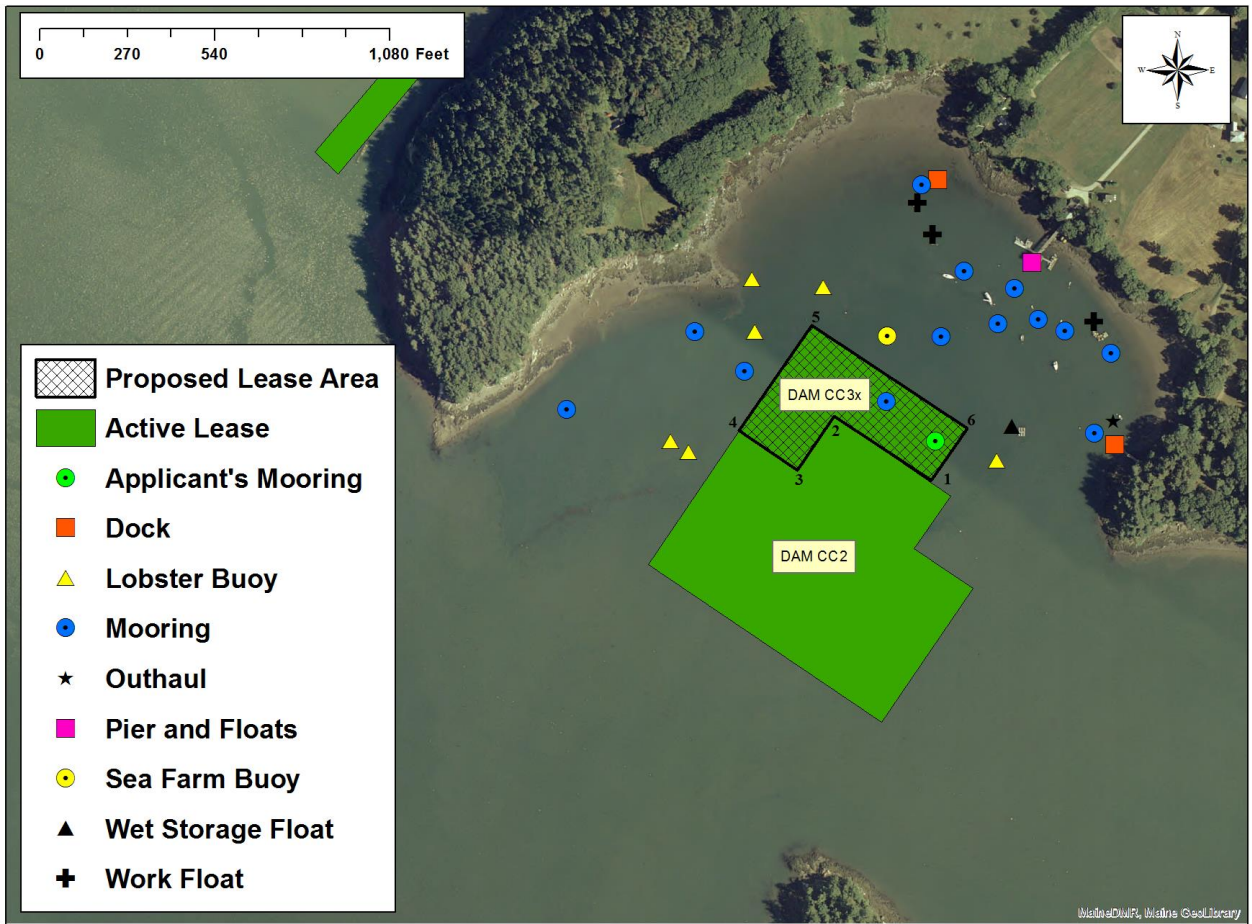


Figure 2: Proposed lease and surrounding features observed on July 6, 2021.



Image 1: Looking northeast at the Clark Cove shoreline from west of proposed corner 5 (July 6, 2021).



Image 2: Looking southeast and out of Clark Cove/downriver from west of proposed corner 5 (July 6, 2021).



Image 3: Looking south toward the applicant’s existing aquaculture lease DAM CC3x, aquaculture lease DAM CC2, and Miller Island from west of proposed corner 5 (July 6, 2021).



Image 4: Looking west out of Clark’s cove from west of proposed corner 5 (July 6, 2021)



Image 5: Looking north from west of proposed corner 5 (July 6, 2021)

Depth

Water depth was not measured at the proposed lease site during the July 6, 2021 site visit. However, depth measurements were collected previously with a transom mounted depth sounder on August 4, 2016 during the site assessment for the applicant’s existing experimental lease DAM CC3x. On this date, MDMR staff arrived on site and collected depths at approximately 10:19am; the tide was in the flood stage. At the time of MDMR’s site assessment on August 4, water depths at the proposed lease corners ranged from 27 feet to 52 feet. Therefore, correcting for tidal variation, water depths at the proposed lease corners are approximately 21 feet to 46 feet at mean low water (MLW, 0.0’).

Table 1: Tide predictions at Walpole, Damariscotta River, ME (43.9333° N, 69.5800° W)³

Date	Time	Height (ft)
8/4/2016	12:35 AM	11.05 H
8/4/2016	7:03 AM	-0.77 L
8/4/2016	1:09 PM	10.03 H
7/6/2021	4:35 AM	9.30 H
7/6/2021	10:59 AM	0.69 L
7/6/2021	5:11 PM	9.30 H

³ <http://tbone.biol.sc.edu/tide/tideshow.cgi>

Bottom Characteristics

The bottom of the proposed lease site was assessed with a remotely operated vehicle (ROV) on July 6, 2021. The observed bottom substrate was entirely soft mud (Image 5). Bottom characteristics were categorized using the Coastal and Marine Ecological Classification Standard (CMECS), a national standard for describing features of the marine environment. Sediment information was determined based on visual analysis of the video; no sediment samples were taken, or grain size analysis performed. The substrate types observed during the ROV transects and drops are included in Table 2.

Table 2: Bottom characteristics of proposed site.

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

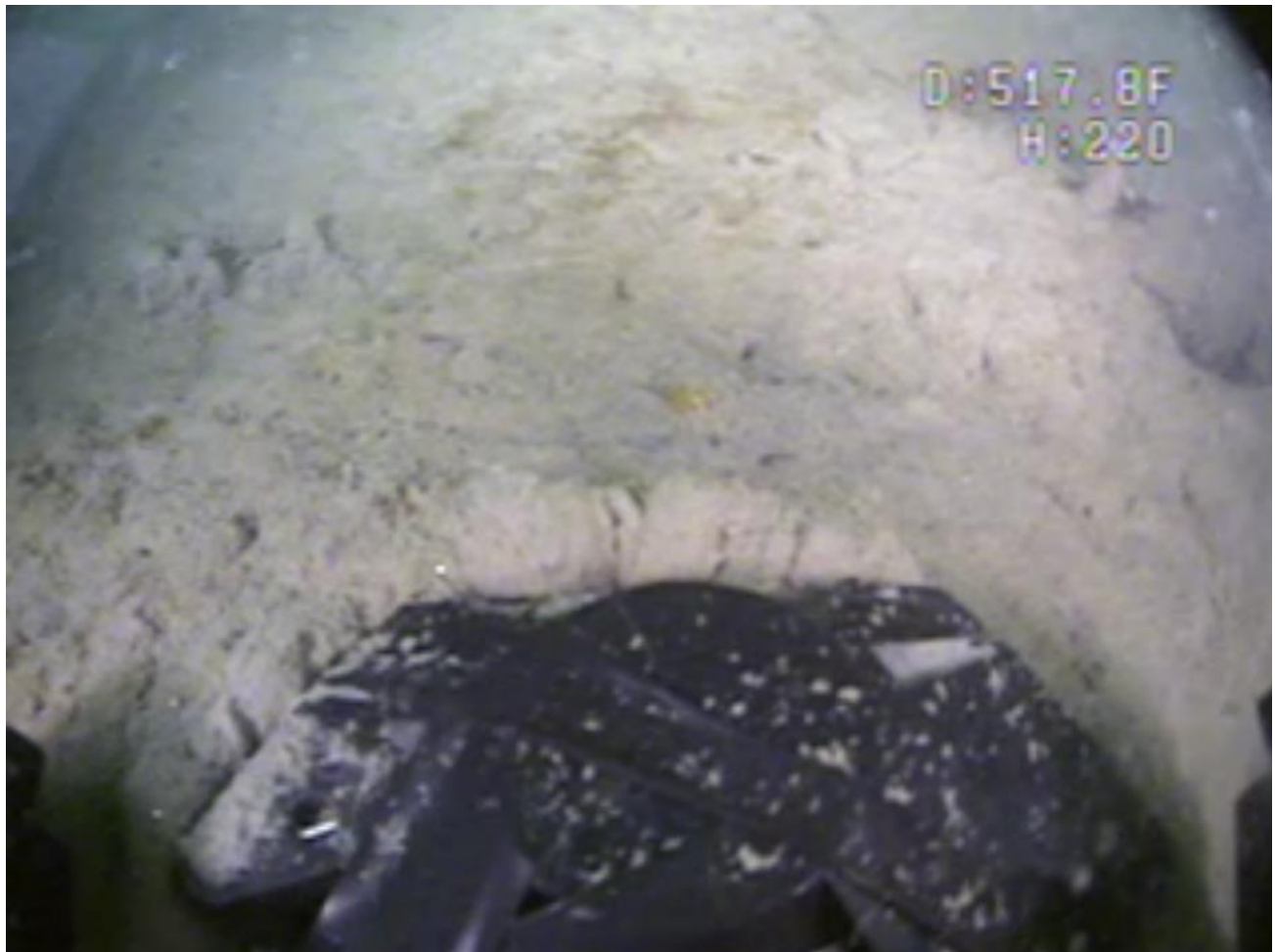


Image 5: Soft mud substrate on the bottom of the proposed lease area (July 6, 2021).

Position and Distances to Shore

The measuring tool and COGO report tool in ArcMap version 10.8 were used to verify the distances and bearings between proposed lease corners. Distances to shore were determined using the measuring tool in ArcMap version 10.8, digital orthophotography provided by the Maine Office of GIS, and the application coordinates.

Application Coordinates (NAD83)– 3.58 Acres (Figure 2)

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>
1	43.928941° N	69.572417° W then 359.89 feet at 303.40° True to
2	43.929479° N	69.573563° W then 200.36 feet at 214.18° True to
3	43.929022° N	69.573986° W then 217.63 feet at 304.29° True to
4	43.929355° N	69.574672° W then 394.38 feet at 34.70° True to
5	43.930249° N	69.573828° W then 575.44 feet at 123.57° True to
6	43.929385° N	69.571999° W then 195.69 feet at 214.63° True to Corner 1.

Table 3: Approximate distances from proposed lease to surrounding features (Figures 1 & 2).⁴

Feature	Distances (feet)
Corner 5 to Nearest Point, Mainland (~MLW)	~ 260 feet to the northwest
NE Side (Corner 5 - Corner 6) to Large Pier and Float Infrastructure	~530 feet to the northeast
Corner 6 to Nearest Point, Mainland (~MLW)	> 400 feet to the east
Corner 6 to Dock on Clark Cove’s Eastern Shore	~450 feet to the east
Corner 1 to Nearest Point, Miller Island (~MLW)	~ 1,180 feet to the southwest
Corner 3 to Nearest Point, Miller Island (~MLW)	~1,170 feet to the south
Corner 3 to 22-Foot Contour Line on Southern Side of Navigational Channel (NOAA Chart)	~930 feet to the south

The criteria MDMR uses to determine the suitability of an aquaculture operation to a particular area (MDMR Regulations Chapter 2.37(1)(A)) are discussed, with respect to the proposal, below.

(1) Riparian Owners Ingress and Egress

At the time of MDMR’s site assessment on July 6, 2021, MDMR staff observed 2 docks and one larger pier and float infrastructure within Clark Cove (Figure 2). The dock located on the eastern shore had a small motorboat hauled out on the associated float and an outhaul system for a rowboat and small dinghy. Additionally, a sailboat was observed hauled out on shore near this dock. The second dock, which was located to the north of the proposed lease, had 2 boats docked and an inflatable dinghy hauled out on the associated float at the time of MDMR’s visit. The larger pier and

⁴ Measurements were made using digital orthophotography provided by The Maine Office of GIS (orthoCoastalCentralCoast2003and2005)

float infrastructure, which was also located to the north of the proposal, had 3 dinghies docked, with additional inflatable and hand powered vessels hauled out on the floats. A total of 14 moorings were observed within the cove, two of which were inside the proposed lease boundaries. One of the moorings within the proposed lease boundaries was anchoring the vessel “Oyster Girl 2,” which is a commercial aquaculture vessel associate with Pemaquid Oyster Company, Inc. The other mooring was anchoring what appeared to be another commercial aquaculture vessel, presumably associated with the applicant. The other 12 moorings in the cove were to the west, north, and east of the proposed lease and were observed to be anchoring sailing vessels, commercial lobster vessels, and recreational motorboats. The “Sea Farm” buoy, displayed in Figure 2, and observed outside of the proposed lease boundaries, was anchoring an aluminum processing barge. Lastly, MDMR staff noted one wet storage raft with 2 skiffs tied to it and 3 work floats, two of which had commercial lobster vessels tied to them, within Clark Cove during the July 6, 2021 site assessment (Figure 2). It is also worth noting that during a site assessment in the same area on August 4, 2016, MDMR staff noted an additional dock in Clark Cove, northeast of the proposal.

Based on the above paragraph, it appears there is ample riparian activity within Clark Cove, including ingress and egress from docks, moorings, and outhaul systems. Additionally, riparian landowners may be able to access their properties via shore landing, especially with shallow draft or hand powered vessels. Moreover, there is significant commercial fishing and aquaculture activity within the cove that may currently influence riparian ingress and egress. The presence of year-round suspended gear in the center of the cove is likely to cause at least minor interference to riparian access, such as alteration of routes or generalized vessel congestion. The nearest mooring outside of the proposed lease boundaries, and therefore presumably not associated with the application, is approximately 90 feet to the west of the proposed 4-5 boundary and was empty at the time of MDMR’s site assessment. Depending on the size and type of vessel that uses this mooring, accessing the mooring may be difficult in such close proximity to suspended gear, especially in inclement weather or under sail. However, the applicant is currently operating an experimental lease, DAM CC3x, in the same footprint and with the same gear type as the proposed standard lease. Therefore, granting the proposed lease would not result in additional interference to riparian access, but rather would be a long-term continuation of existing interference to riparian access, if any.

Finally, clear and adequate marker buoys on the lease, if it were to be granted, would be imperative for safe water-borne access to riparian properties within the cove. Previous inspections conducted on the applicant’s existing experimental lease DAM CC3x, which the proposal under consideration in this report would replace, indicate that while the site has at times been marked in accordance with MDMR Regulations Chapter 2.80, there have also been times when the site ID was not present on marker buoys and the marker buoys were not clearly distinguishable from other farm buoys (e.g. depth control buoys attached to marine algae longlines). The most recent inspection, conducted at the time of the site visit on July 6, 2021, found that corner markers were present with the required information on them.

(2) Navigation

Vessels moving through the main navigational channel of the Damariscotta River, located to the south of the proposal, would not be impeded by the proposed activities due, in part, to the fact that an existing aquaculture lease (DAM CC2) sits between the proposed lease and the main channel. During MDMR’s site assessment on July 6, 2021, staff observed a commercial lobster vessel entering Clark Cove from the main navigational channel and transiting between the proposal and the

eastern shore of the cove. Approximately 450 feet would remain between the proposed lease site and the cove's eastern shore (~MLW). There would be a minimum of ~260 feet between the western shore of Clark Cove and the western boundary of the proposed lease (~MLW). As noted above, clear and adequate site markings would be imperative to ensure safe navigation within the general area.

At the time of this report, the harbormaster did not provide a completed Harbormaster Questionnaire for this proposal.

(3) Fishing and Water-Related Uses

On July 6, 2021, MDMR staff observed 6 lobster trap buoys in Clark Cove, which were located to the west, north, and east of the proposal. The nearest lobster trap observed was approximately 130 feet from the proposal. No lobster trap buoys were observed within the proposed lease footprint, but this may be due to the fact that the area is an active experimental lease. Heavy lobster fishing activity was noted south of existing lease DAM CC2. Fishing-related uses in the cove appeared to include work rafts, the mooring of commercial lobster vessels, and lobster trap storage on both work rafts and docks. The nearest work raft to the proposal was approximately 440 feet to the north, and therefore activity occurring on the work raft is unlikely to be impacted by the proposal. MDMR staff noted 3 commercial vessels attached to moorings and 2 commercial lobster vessels attached to work floats within the cove. The nearest of these lobster boats was approximately 425 feet to the northeast of the proposal. Although the proposed lease footprint does not appear to directly conflict with active fishing bottom, there appears to be significant activity in the cove associated with commercial fishing operations. Therefore, it is possible that the presence of suspended gear in the middle of the cove may cause some amount of vessel congestion and thereby interfere to some degree with the use of moorings and work floats associated with lobster fishing.

A wet storage float was also observed approximately 130 feet east of the proposal, and which is not associated with the applicant. Work occurring on the wet storage float is unlikely to be hindered if the proposed lease were granted, but access to and from the float, particularly from upriver, would likely require the user to navigate around the proposed lease site instead of taking the most direct route.

(4) Other Aquaculture Uses

At the time of this report, there were 3 active leases, one proposed standard lease, and 17 active Limited Purpose Aquaculture (LPA) licenses within 1 mile of the proposal (Figure 3). The proposed lease would replace existing experimental lease DAM CC3x, which occupies nearly the same footprint. The nearest lease outside the proposed boundaries is DAM CC2, which is held by the applicant. There were no other aquaculture activities within 1 mile of the proposed lease area.

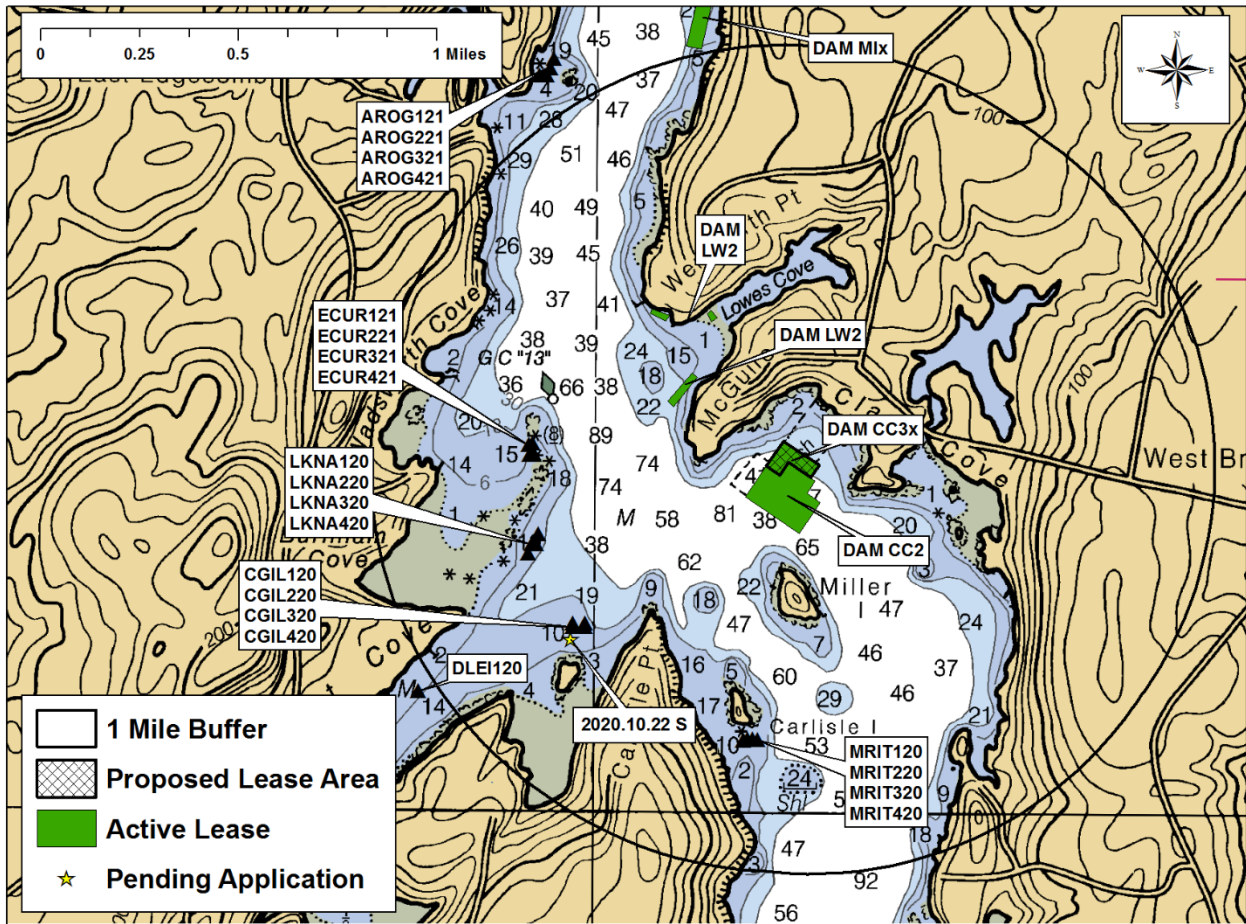


Figure 3: Aquaculture sites within 1 mile of the proposal.

(5) Existing System Support

On July 6, 2021, MDMR examined the epibenthic ecology of the proposed lease site with a Remotely Operated Vehicle (ROV). One stationary drop and two transects were conducted within the proposed lease boundaries, and one short transect was conducted immediately outside of the proposal (Figure 4). In the video footage obtained, the bottom substrate was observed to be entirely soft mud. The most abundant species observed was benthic diatoms. Other species and observations are listed in Table 4.

Table 4: Species observed via SCUBA within the proposed lease site on July 6, 2021.

Species Observed	Abundance
Benthic Diatoms	Abundant
Crab (<i>Cancer sp.</i>)	Rare
Unidentified Macroalgae	Rare
Burrows	Patchily Common
Tracks	Patchily Common

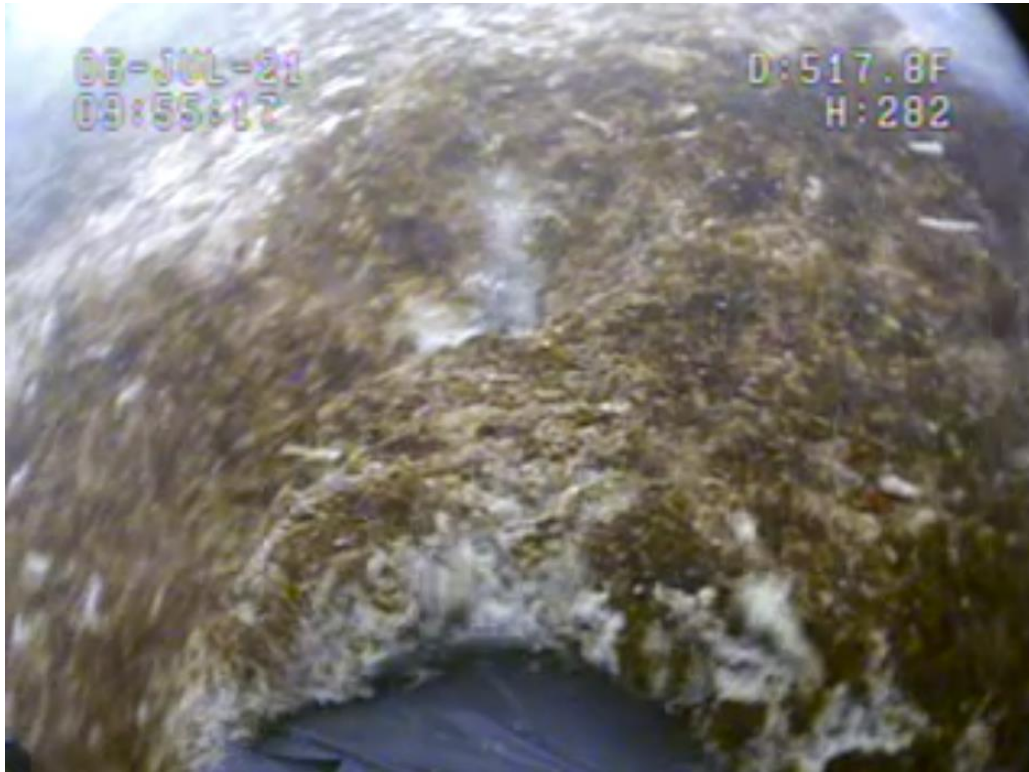


Image 11: Benthic diatoms on the proposed lease bottom (July 6, 2021).



Image 11: Burrows on the proposed lease bottom (July 7, 2021).



Figure 4. ROV stationary drop and transects conducted on July 6, 2021.

Eelgrass

No eelgrass was observed from the limited benthic observation via ROV. Additionally, records of eelgrass distribution collected by MDMR in 2005 do not indicate historical eelgrass presence in Clark Cove (Figure 5).

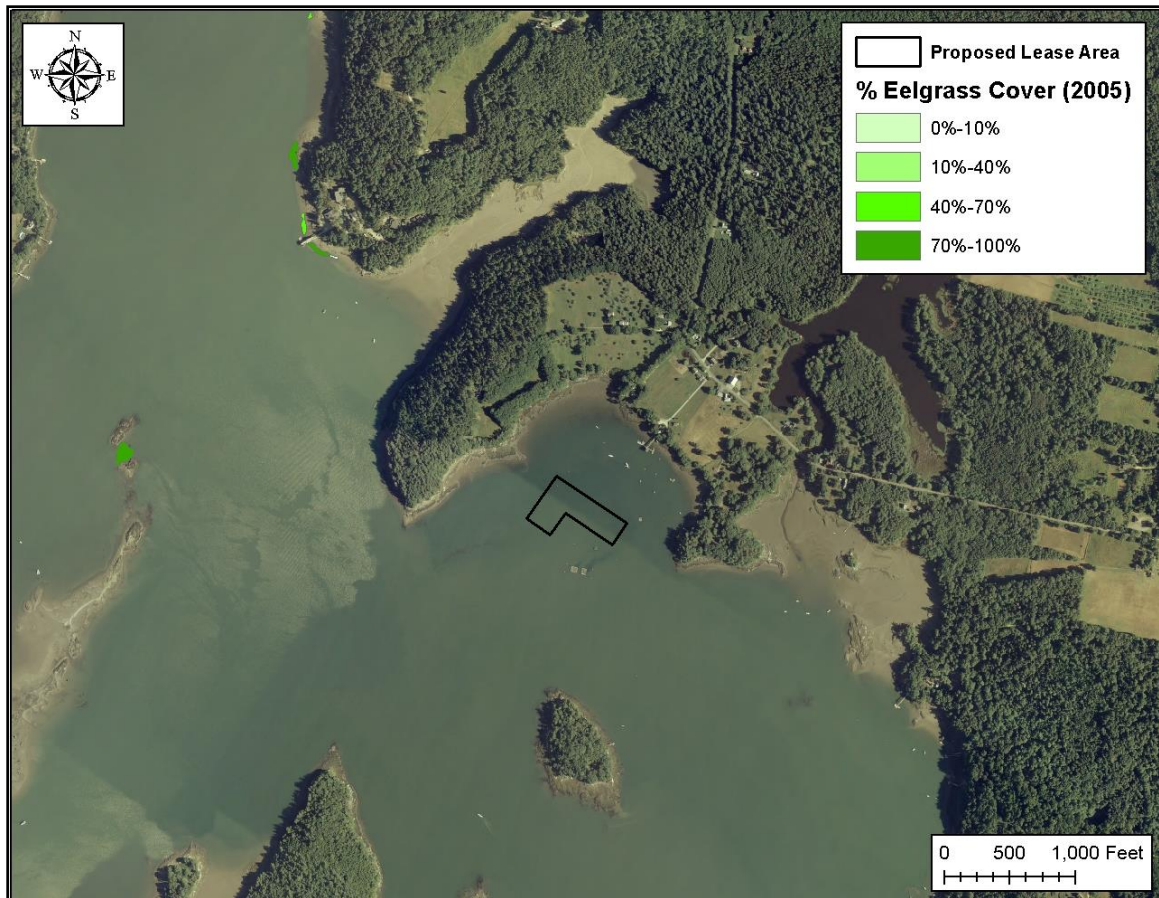


Figure 5: Historical eelgrass in vicinity of proposed lease site.⁵

Wildlife

No wildlife was noted during MDMR’s assessment on July 6, 2021, but a previous site assessment in the area noted herring gulls (*Larus argentatus*), double-crested cormorants (*Phalacrocorax auritus*), and common terns (*Sterna hirundo*) on August 4, 2016. According to GIS (Geographic Information System) data maintained by the Maine Department of Inland Fisheries and Wildlife (MDIF&W) and available through the Maine Office of GIS, the proposed lease is approximately 870 feet to the west of an area designated as Tidal Waterfowl and Wading Bird Habitat (Figure 6). Tidal Waterfowl and Wading Bird Habitat is defined under Maine’s Natural Resources Protection Act (NRPA) as Significant Wildlife Habitat. Additionally, the proposal is over 1,000 feet from the 660-foot protective buffer around a bald eagle nest on Miller Island.

⁵ Image take from site report written for existing lease DAM CC3x

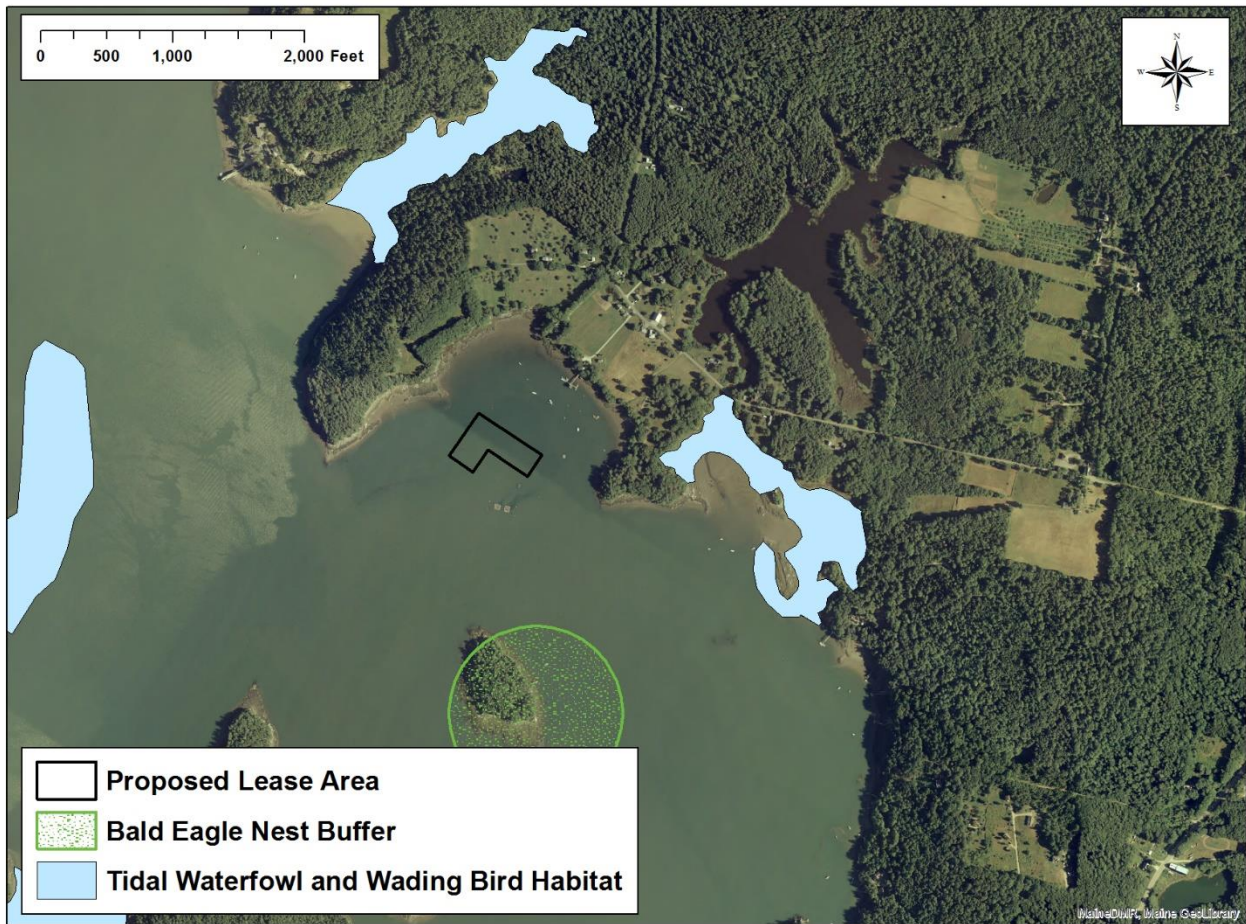


Figure 6. Tidal Waterfowl and Wading Bird Habitat⁶ and Bald Eagle Nest⁷ near the proposed lease site.

(6) Interference with Public Facilities

There are no public docking facilities or beaches within 1,000 feet of the proposed lease. A conservation easement held by the Maine Department of Inland Fisheries and Wildlife is located ~450 feet to the east of the proposed lease (Figure 7).

⁶ Data obtained from MDIWF maintained SDE Feature Class "GISVIEW.MEIFW.Twwh"

⁷ Data obtained from:

https://services.arcgis.com/QVENGdaPbd4LUkLV/arcgis/rest/services/Maine_Bald_Eagles_2019_with_twn_cnty/FeatureServer

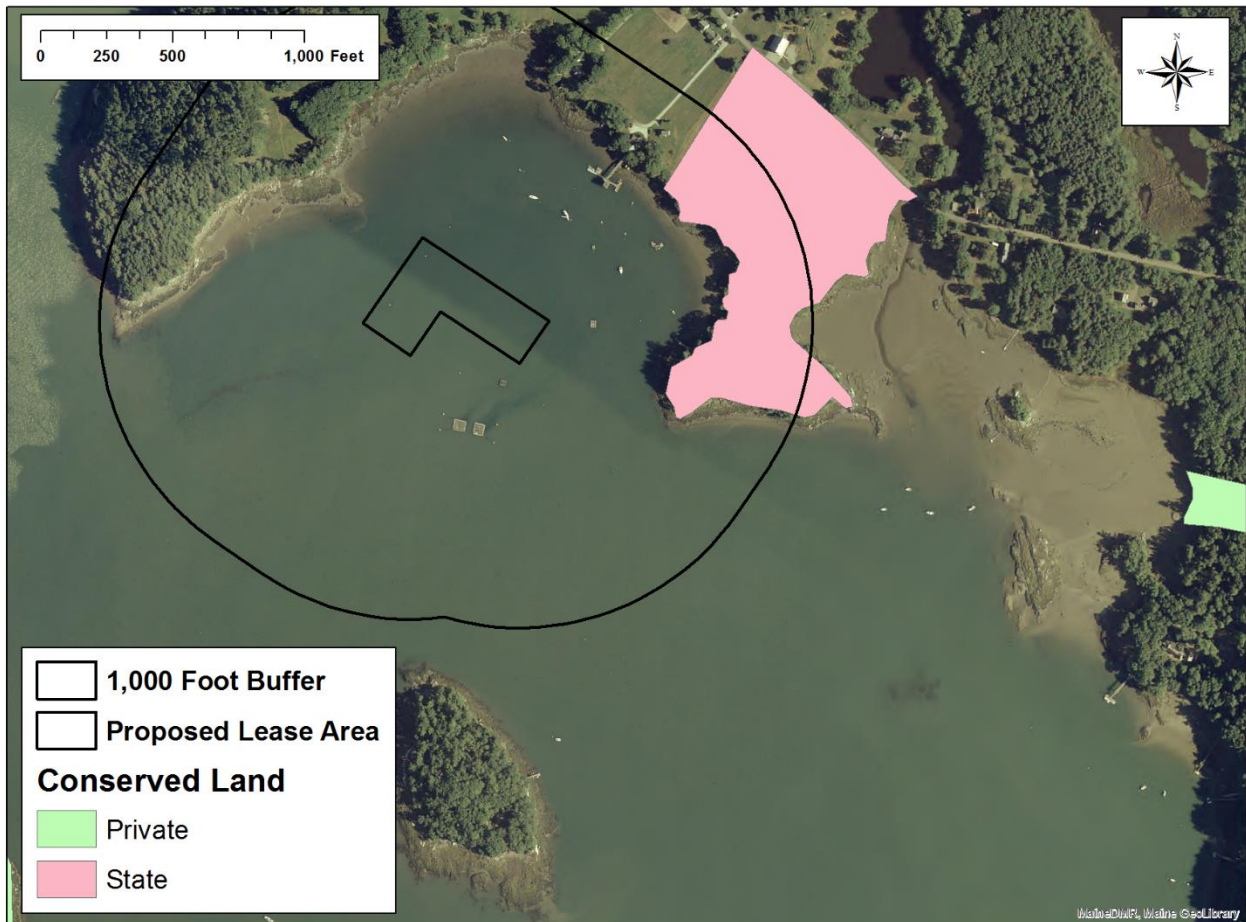


Figure 7. Conserved land near the proposal.

(7) Water Quality Classification

The proposed lease is in an area currently classified by the Department of Marine Resources Water Quality Classification program as “open/approved for the harvest of shellfish”.

(8) Lighting

The applicant does not propose the use of lighting at the lease site or working beyond daylight hours except during a potential emergency.⁸

(9) Noise

According to the application, boats used on the site would range from 19-foot to 28-foot skiffs, powered with four-stroke engines. In order to reduce noise, boats would be operated at or near idle and, except during large harvests, only one boat would be operated at a time. This type and size of vessel is consistent with those routinely used for recreational and commercial purposes along the Maine coast.

⁸ Application, page 9

Power equipment used on site would include a deck pump powered by a gas engine and an electric winch.⁹

(10) Visual Impact

The aquaculture equipment and vessels proposed for use, should the lease be granted, meet the visual impact standards as set forth in MDMR Regulation Chapter 2.37(A).

⁹ Application, page 9