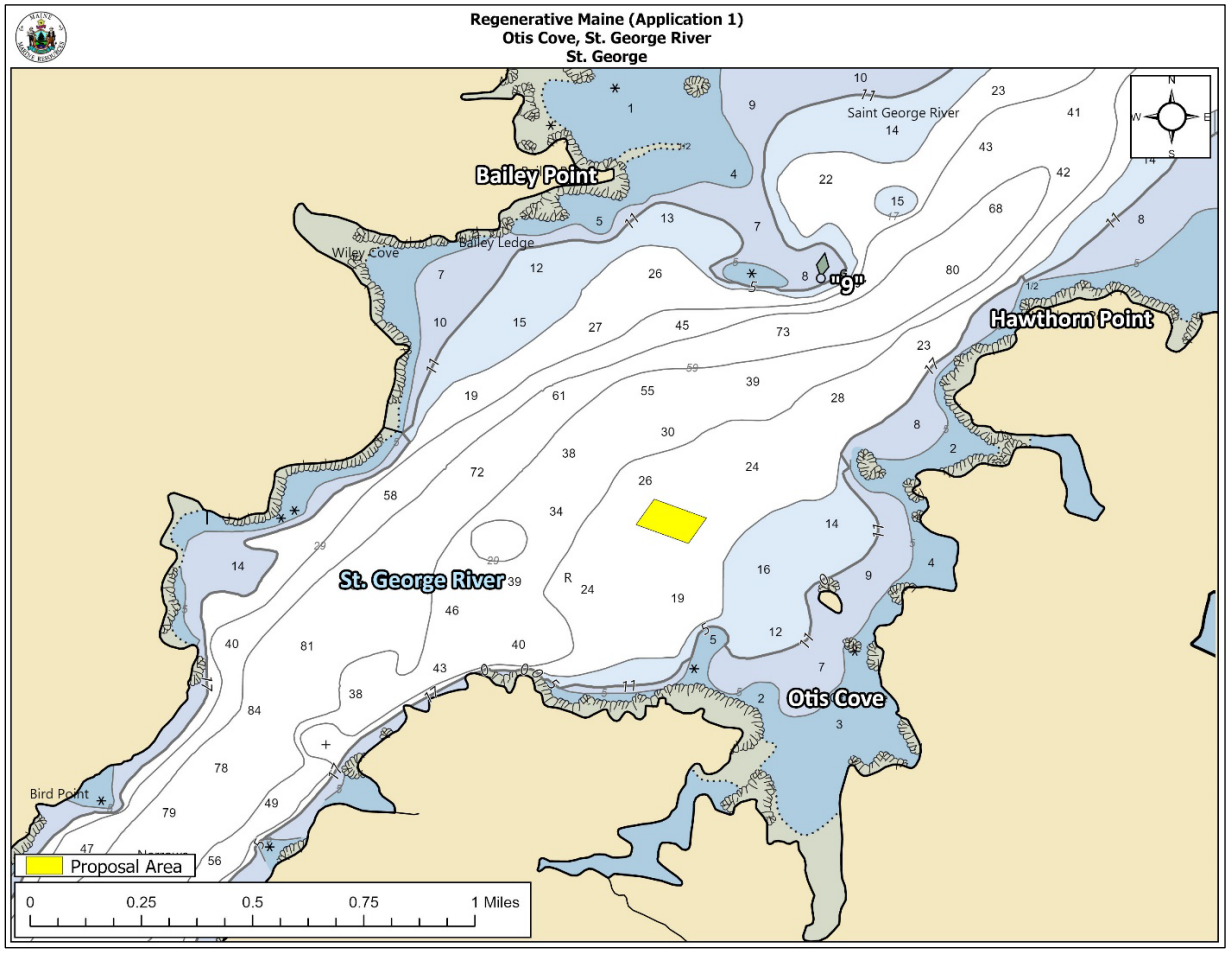

Figure 1. Vicinity map.[1]

Location: Otis Cove, St. George River, St. George, Knox County, Maine

Purpose: Experimental lease for suspended culture of sugar kelp (*Saccharina latissima*) and skinny kelp (*Saccharina angustissima*).

Site Review: Geoffrey Shook and Katie Von Hohenleiten
Report Preparation: Geoffrey Shook and Meryl Grady

[1] Unless otherwise noted, all figures in this report were created in ArcGIS Pro version 3.3 using digitized NOAA Nautical Charts or geo-referenced aerial photographs provided by ESRI World Imagery (Firefly).

Application Overview

The applicant, Regenerative Maine, is requesting a 3.89[2]-acre experimental lease in Otis Cove, in the St. George River for the suspended culture of marine algae. The applicant intends for the site to be active seasonally from October 15-May 31. Between June 1 – October 14, all gear (excluding moorings, mooring lines, and mooring balls) would be removed from the site. State-required lease markers would remain on site year-round.[3]

General Characteristics

On September 11, 2024, Maine Department of Marine Resources (MDMR) scientists visited the proposed lease site. MDMR scientists arrived on site at approximately 10:56 AM. The proposal is located in subtidal waters in Otis Cove approximately 1,675 feet north of the Otis Cove shoreline at mean low water (MLW) (Figure 1). The Otis Cove shoreline in the vicinity of the proposal was observed to consist of rock ledges leading to small residential lawns with mixed forests uplands. The western shoreline of the river in the vicinity of the proposal was observed to consist of a mix of boulders, ledges, and beaches.

Depth

On September 11, 2024, MDMR scientists began collecting depths at the proposed site around low tide at approximately 10:58 AM. The next low tide was predicted at 10:59 AM (Table 1). Depths were determined to be between 20.0-26.3 feet. Correcting for tidal variations derives depths at mean low water (MLW, 0.0 feet) to be between 18.0-24.3 feet.

Table 1. Predicted tidal heights in Port Clyde, Maine.[4]

Date	Time	Height (ft)
2024/09/11	5:02 AM	7.5 H
2024/09/11	10:59 AM	2.0 L
2024/09/11	5:13 PM	8.7 H
2024/09/11	11:48 PM	1.4 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 proposed lease site is primarily composed of mud.

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

[2] Applicant originally requested 4.0 acres. MDMR calculations indicate the area is 3.89 acres.
[3] Application pages 7, 17
[4] https://www.usharbors.com/harbor/maine/port-clyde-me/tides/?tide=2024-09#monthly-tide-chart

Position and Distances to Shore

The geodesic measuring tool in ArcGIS Pro 3.3 was used to verify the distances and bearings between proposed lease corners. Distances to shore were determined using the measuring tool in ArcGIS Pro 3.3, a nautical chart provided by the National Oceanic and Atmospheric Administration (NOAA), and the application coordinates (Table 3, Figures 2 and 3).

Application Coordinates (WGS84) – 3.89 Acres

Corner	Latitude	Longitude					
NW	43.991249°	-69.243248°	then	500	feet at	118°	True to
NE	43.990635°	-69.241550°	then	340	feet at	208°	True to
SE	43.989809°	-69.242149°	then	498	feet at	296°	True to
SW	43.990420°	-69.243841°	then	340	feet at	026°	True to NW

Table 3. Approximate distances from proposal corners to surrounding features (Figures 2 &3).

Feature	Distance
NE corner to Otis Cove shoreline at MLW	~1,782’ to the east-southeast
SE corner to Otis Cove shoreline at MLW	~1,675’ to the south
SW corner to Otis Cove shoreline at MLW	~1,924’ to the south
NE corner to Hawthorn Point at MLW	~2,550’ to the northeast
NW corner to Hawthorn Point at MLW	~2,793’ to the northeast
NW corner to Bailey Point at MLW	~3,414’ to the northwest
SW corner to Bailey Point at MLW	~3,656’ to the northwest
NW corner to Cushing shoreline at MLW	~2,334’ to the west
NW corner to green navigation buoy “9”	~2,974’ to the north-northeast
SW corner to green navigation buoy “7”	~9,630 to the southwest

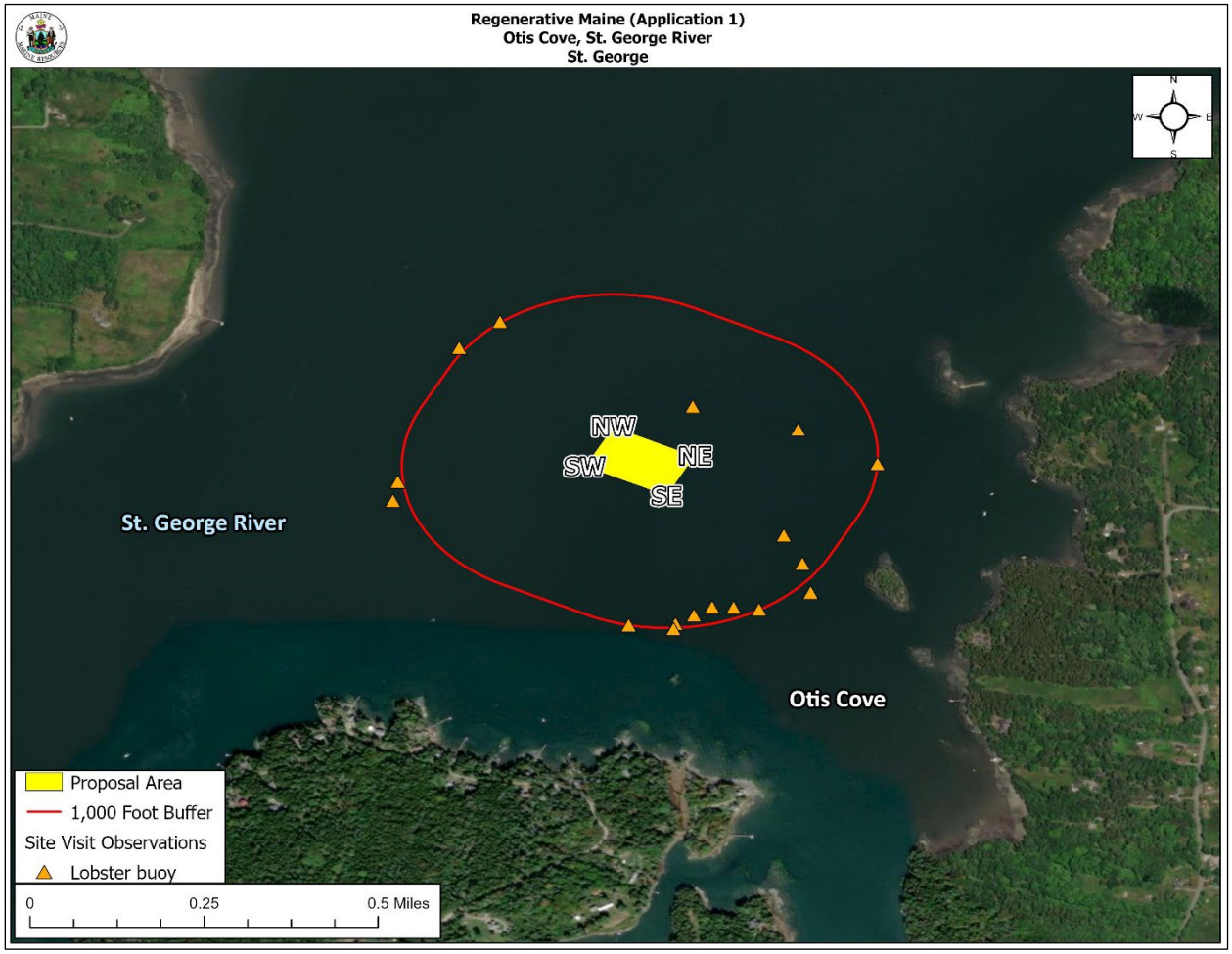

Figure 2. Proposed lease area with site visit observations.

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 the site visit, MDMR did not observe any docks, houses, or moorings within the vicinity of the proposal. Aerial imagery[5] indicates all the following observations. The nearest residential pier and dock is located in the southwestern portion of Otis Cove approximately 1,859 feet to the south. There are four additional piers and docks in the southern portion of the cove located approximately 1,992 feet, 2,028 feet, 2,042 feet, and 2,129 feet south of the proposal. There are approximately seven moorings in the vicinity of these piers with the closest located approximately 1,772 feet south of the proposal. There are also three piers and docks along the eastern shore of the river approximately 1,866 feet, 1,958 feet, and 2,117 feet east of the proposal. There are also approximately six moorings in the vicinity of these piers with the closet located approximately 1,638 feet to the east of the proposal. Also, there are approximately four

[5] ESRI World Imagery (Firefly)

piers and docks within the southeastern portion of Otis Cove with the closest located approximately 2,184 feet to the southeast.

A Harbormaster Questionnaire was sent to the Town of St. George. MDMR did not receive a response.

(2) Navigation

The proposal is located in subtidal, navigable waters approximately 1,675 feet north of the Otis Cove shoreline at MLW. There is approximately 2,334 feet of navigable water between the proposal and the western shore of the St. George River at MLW. In this portion of the river, only the western side of the navigational channel is marked with green navigational aids, as needed. Based on charted shallow water and charted hazards along the eastern shore of the river, the northwestern corner of the proposal lies within the navigable channel by approximately 130 feet (Figure 3).

During MDMR's site visit, scientists observed one powerboat transiting along the western shore of the river and one recreational powerboat transiting north immediately to the west of the proposal.

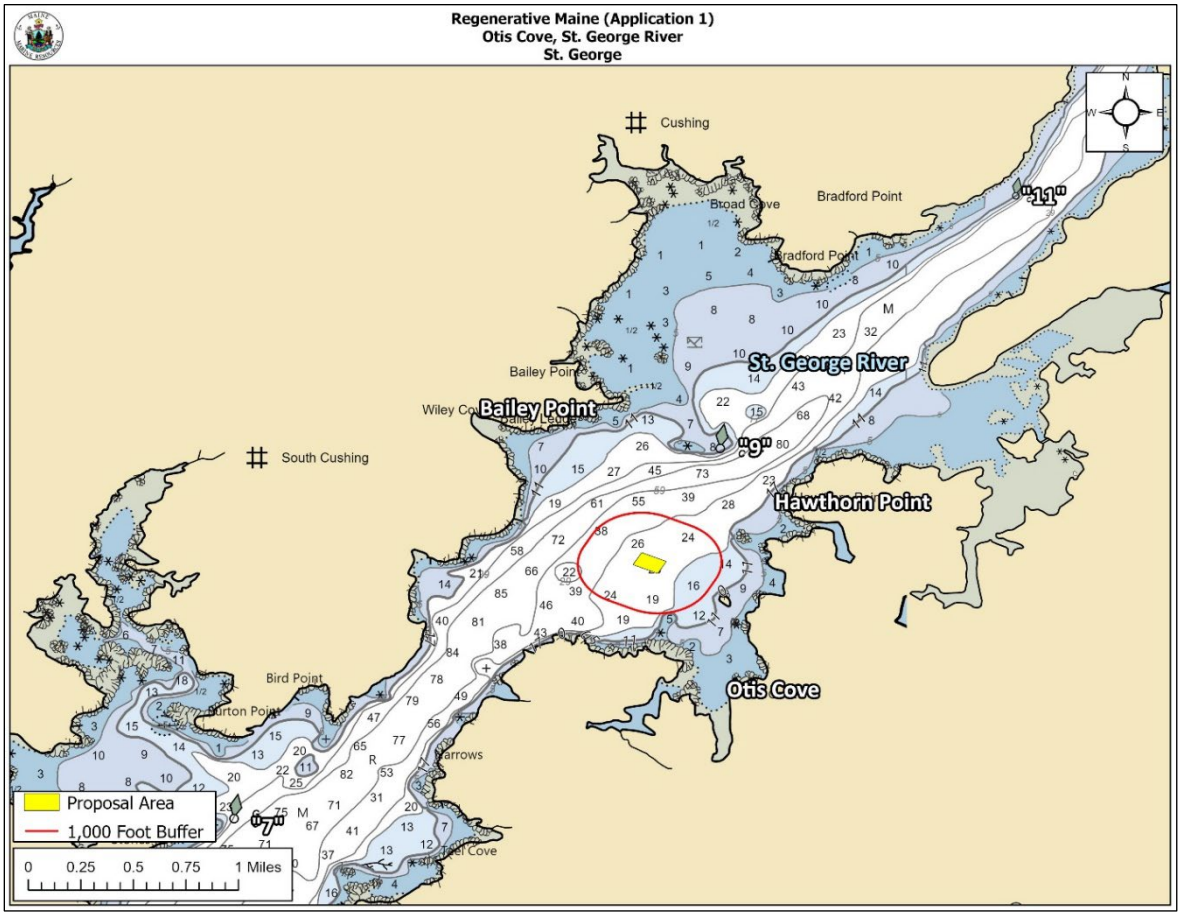

Figure 3. Navigational channels in the vicinity of the proposed lease area.

(3) Fishing and Other Uses

During MDMR's site visit, scientists observed 17 lobster buoys within the vicinity of the proposal, with the nearest buoy located approximately 337 feet to the north. No lobster buoys were observed within the boundaries of the proposal (Figure 2).

(4) Other Aquaculture Uses

There are not any licensed aquaculture leases or limited purpose aquaculture (LPA) sites within 1,000 feet of the proposed lease site (Figure 4).

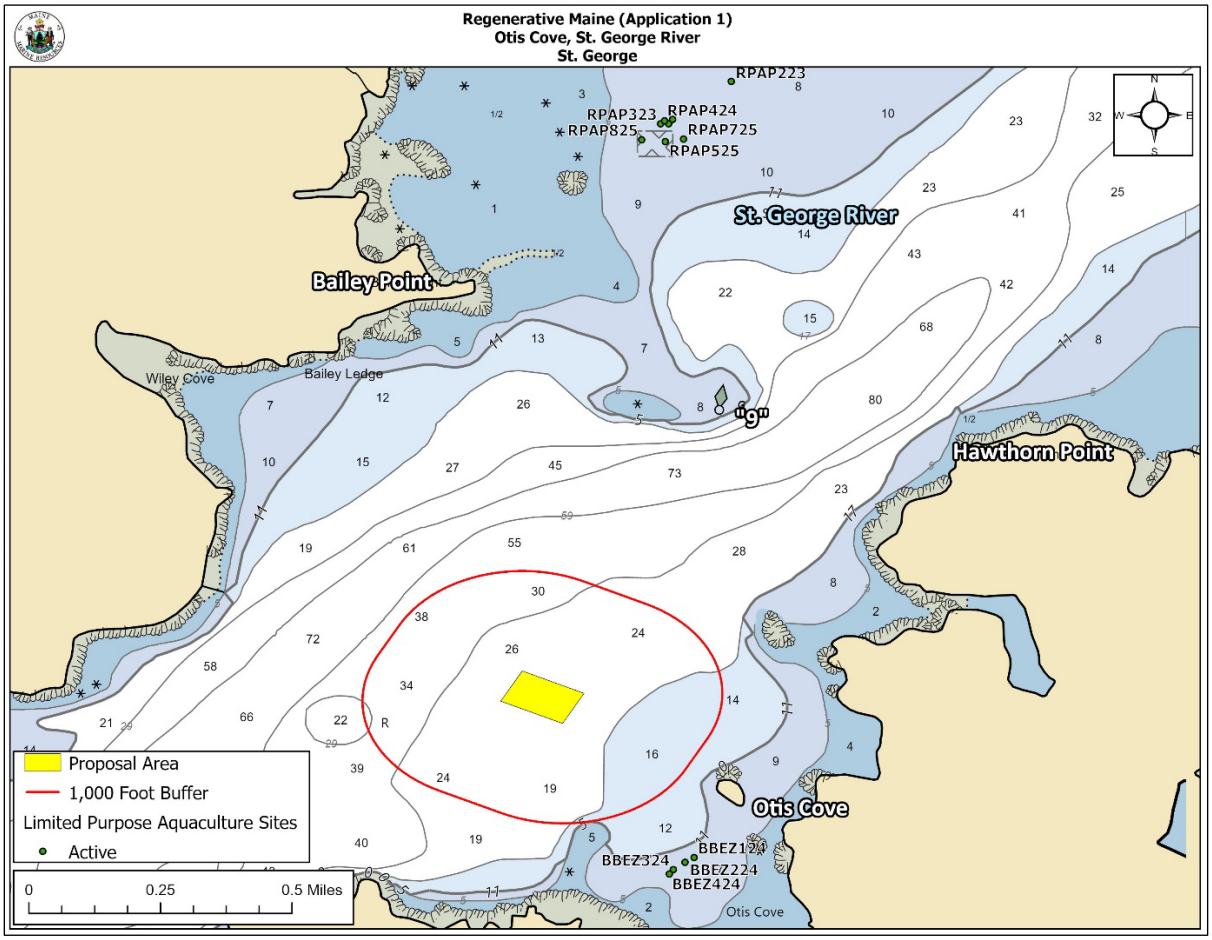

Figure 4. Aquaculture leases and LPA licenses in the vicinity of the proposed lease area.

(5) Existing System Support

Epibenthic Flora and Fauna

MDMR scientists utilized an ROV to assess the epibenthic ecology of the proposed lease. The relative abundance of epibenthic flora and fauna observed in the video footage is described below in Table 4.

Table 4. Species observed on underwater video footage.

Species Observed	Abundance
Mysid shrimp (*Mysis* spp.)	Abundant
Sand shrimp (*Crangon septemspinosa*)	Occasional
Winter flounder (*Pseudopleuronectes americanus*)	Rare
Cancer crab (*Cancer* sp.)	Rare

Eelgrass (*Zostera marina*)

Records of seagrass collected by the Maine Department of Environmental Protection (MDEP) in 2023[6] indicate there is no mapped eelgrass within 1,000 feet of the proposal. The nearest mapped eelgrass is approximately 1,460 feet northeast of the proposal (Figure 5). No eelgrass was observed on underwater video footage within the proposal boundaries during MDMR's site visit.

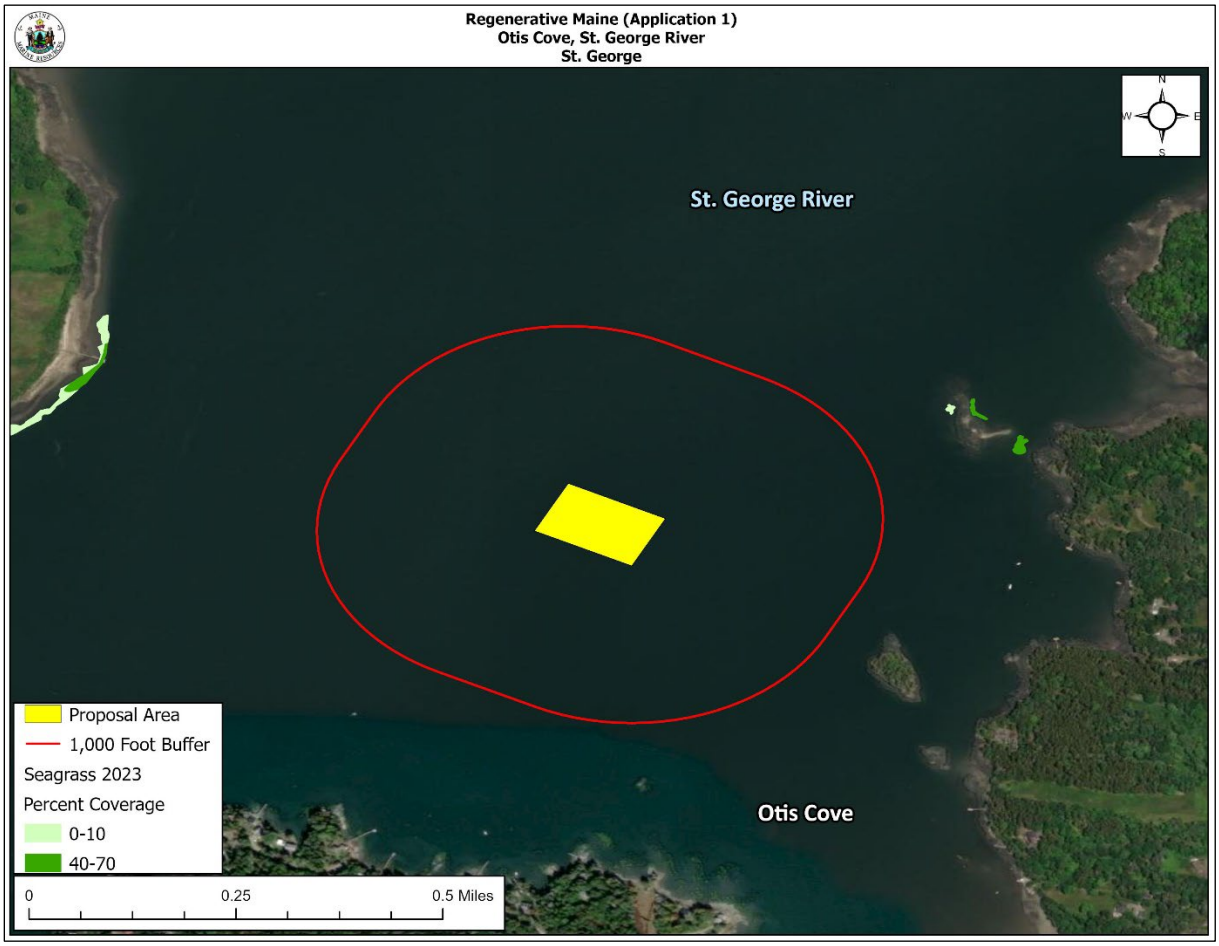

Figure 5. Mapped eelgrass (*Z. marina*) in the vicinity of the proposed lease area.

[6] 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.

Wildlife

During the site visit, MDMR scientists observed herring gull (*Larus argentatus*), double-crested cormorant (*Nannopterum auritum*), harbor seal (*Phoca vitulina*), menhaden (*Brevoortia tyrannus*), osprey (*Pandion haliaetus*), and black guillemot (*Cepphus grylle*) in the general vicinity of the proposal.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) has jurisdiction over inland fisheries and wildlife resources of the state. MDIFW also has the authority to conserve wildlife populations and their ecosystems through applicable state laws and rules. MDMR provides MDIFW with notice and the opportunity to comment on all complete lease applications. In addition, the site report also includes MDIFW designated and mapped habitat types that are within 1,000 feet of the lease proposal, if applicable.

According to Geographic Information System (GIS) data maintained by MDIFW and available through the Maine Office of GIS (MEGIS), there are no mapped habitat types within 1,000 feet of the lease proposal (Figure 6).

Though bald eagles are no longer listed on Maine's Endangered and Threatened Species List, the United States Fish and Wildlife Service (USFWS) may also have jurisdiction over the management and conservation of the species based on applicable law and rule. Data collected by USFWS in 2023 by aerial nest survey shows there is no mapped bald eagle nesting site within 1,000 feet of the proposal (Figure 6).

MDIFW was provided with the opportunity to comment on this proposal. On May 30, 2024, a Resource Biologist with MDIFW responded by email to a "Request for Agency Review and Comment" stating that minimal impacts to wildlife are anticipated for this project. [7]

[7] Email correspondence between MDIFW and MDMR

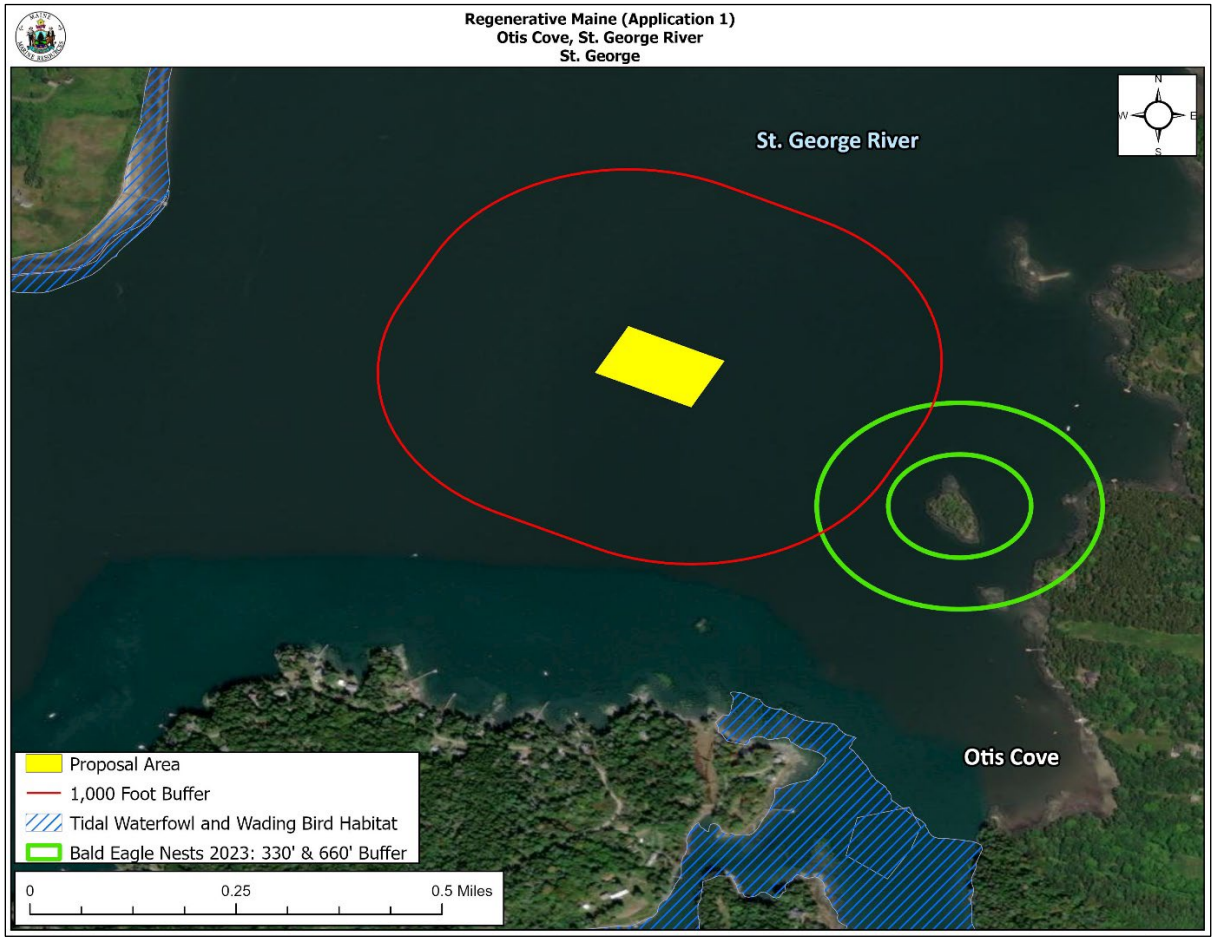

Figure 6. Mapped habitats in the vicinity of the proposed lease area. [8]

(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.

(7) Water Quality

The proposed lease is currently located within an area classified as Approved by the MDMR Bureau of Public Health and Aquaculture.

[8] Data obtained from USFWS "Bald_Eagle_Nests_-_Maine_2023" and MDIFW "EHRTERN", "EHPLVTRN", "GISVIEW.MEIFW.Twwh", "ShorebirdAreas", and "SNI".