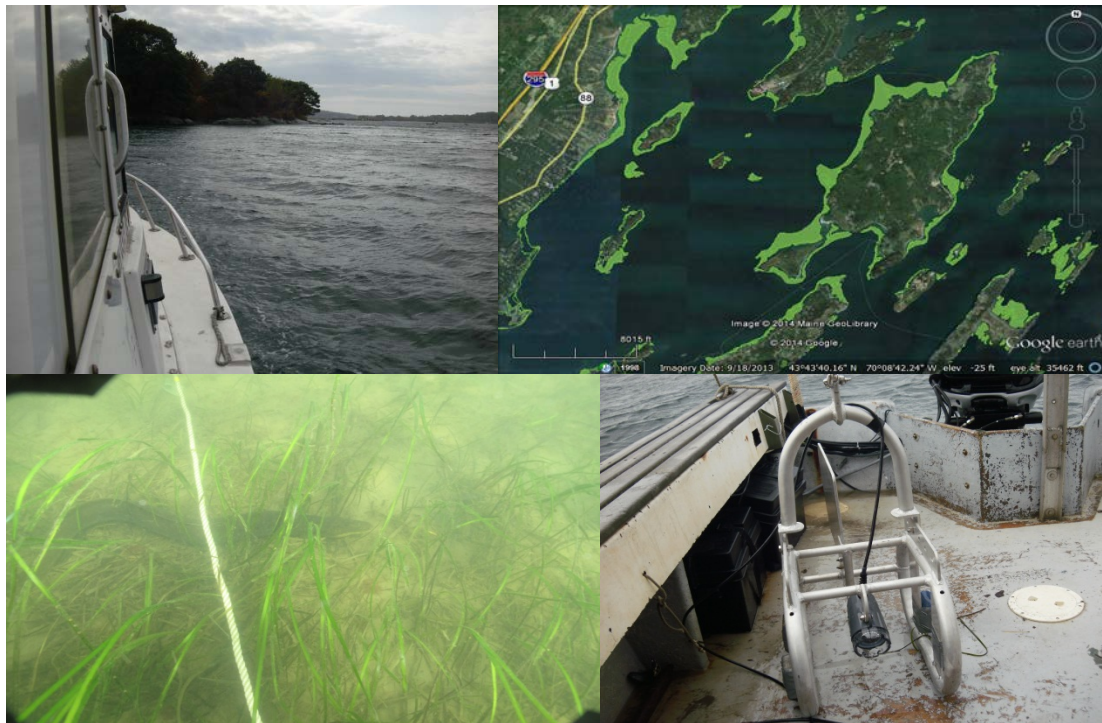




## Chebeague Island Eelgrass Survey



Presented to:  
Milone and MacBroom  
100 Commercial Street - Suite 417  
Portland, Maine 04101

Submitted By  
Normandeau Associates, Inc.  
8 Fundy Road  
Falmouth, ME 04105  
207-797-7717  
[www.normandeau.com](http://www.normandeau.com)

October 15, 2014



October 17, 2014

Mr. Dustin Roma, P. E.  
Lead Project Engineer, Civil  
Milone & MacBroom  
100 Commercial Street – Suite 417  
Portland, Maine 04101

Re: Eelgrass Survey, Chebeague Island, Maine  
Normandeau Project Number: 23529.000

Dear Mr. Roma,

Normandeau Associates, Inc. (Normandeau) is pleased to present the following summary of methods and results of our eelgrass (*Zostera marina*) survey conducted on Chebeague Island on October 7, 2014.

### **Introduction**

Eelgrass, *Zostera marina*, is an aquatic flowering plant commonly found worldwide in shallow marine and brackish waters. On the Atlantic coast of the US, eelgrass ranges from Labrador to North Carolina. In Maine, the habitat is primarily shallow, protected intertidal and subtidal locations with silty/sandy substrate. Eelgrass is also found growing in gravel and cobble on partially exposed shorelines. Eelgrass provides important nursery and foraging habitat for several species of shellfish, finfish, shrimp, crabs, and other invertebrates as well as for wading birds and waterfowl. Changes to water quality, shoreline development, shading from overhead structures, boating activities and human and animal disturbance can negatively affect eelgrass. Eelgrass is highly protected as a "Special Aquatic Site" in US Army Corps of Engineers regulations and as a Coastal Wetland under Maine Department of Environmental Protection's Natural Resource Protection Act.

## **Methods**

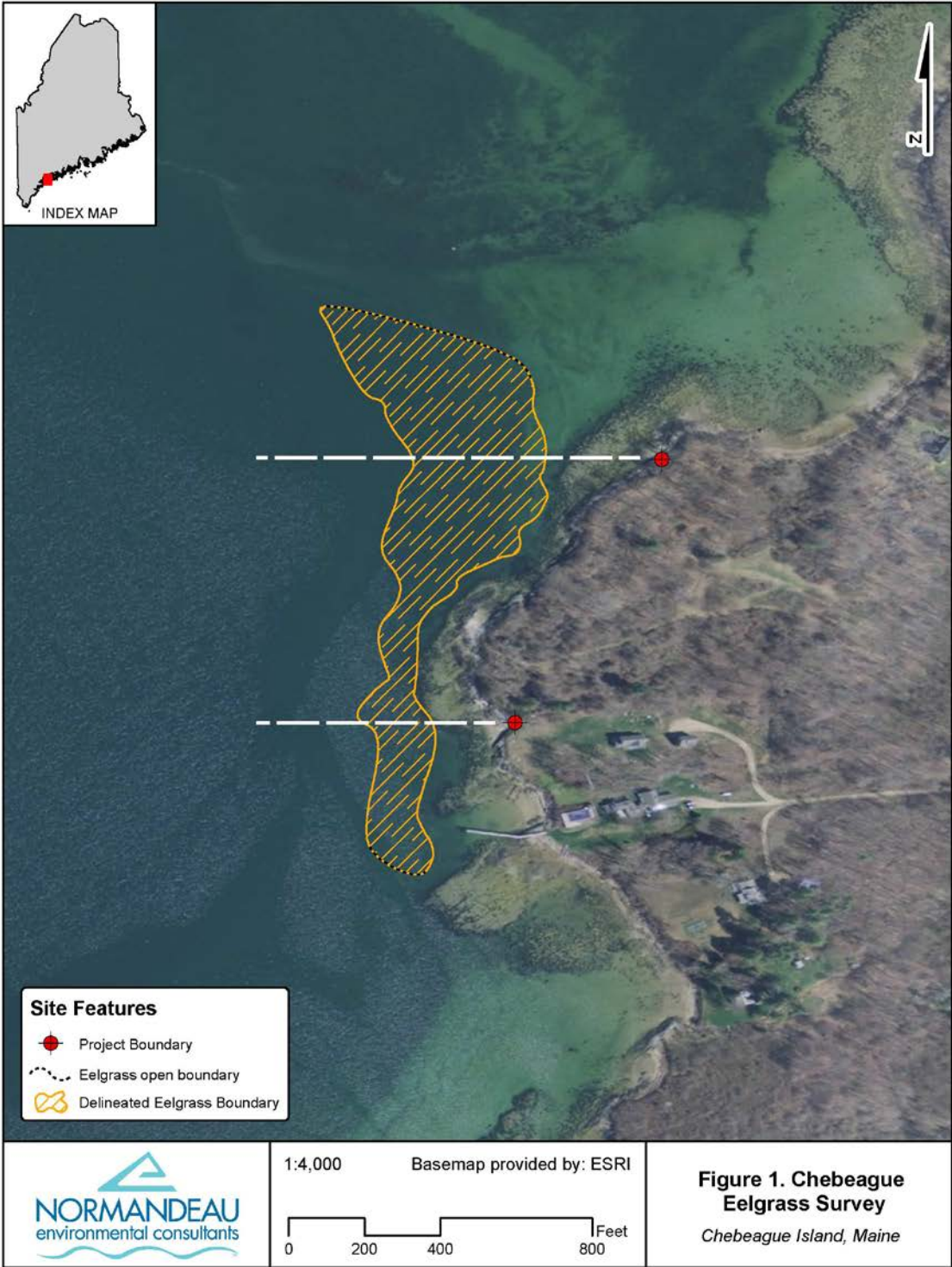
Normandeau biologists conducted an eelgrass survey with an underwater video camera along the shoreline of Chebeague Island on October 7 within and beyond the project area as defined by Milone and MacBroom (Figure 1). The defined project area encompassed approximately six acres of intertidal and subtidal habitat along 900 feet of shoreline (extending 300 to 400 feet seaward) at the end of Sunset Road. Depths ranged between 10 and 28 feet during the survey, which was conducted around the morning high tide (10:30, +1.4 ft). The methodology utilized for this survey followed the Tier I guidelines as described in the June 21, 2011 version of the Joint Federal Regulatory Resource Agency's Submerged Aquatic Vegetation Survey Guidance for the New England Region. The Tier I survey methodology provided a means to make a qualitative assessment of submerged aquatic vegetation (SAV), a group that includes eelgrass, at the site and, to collect basic information on the presence/absence, spatial distribution, and density of the SAV beds, as well as on distribution relative to depth. The survey was completed within the Department of Marine Resources approved window between late April and mid-October (Seth Barker, personal communication, October 2010).

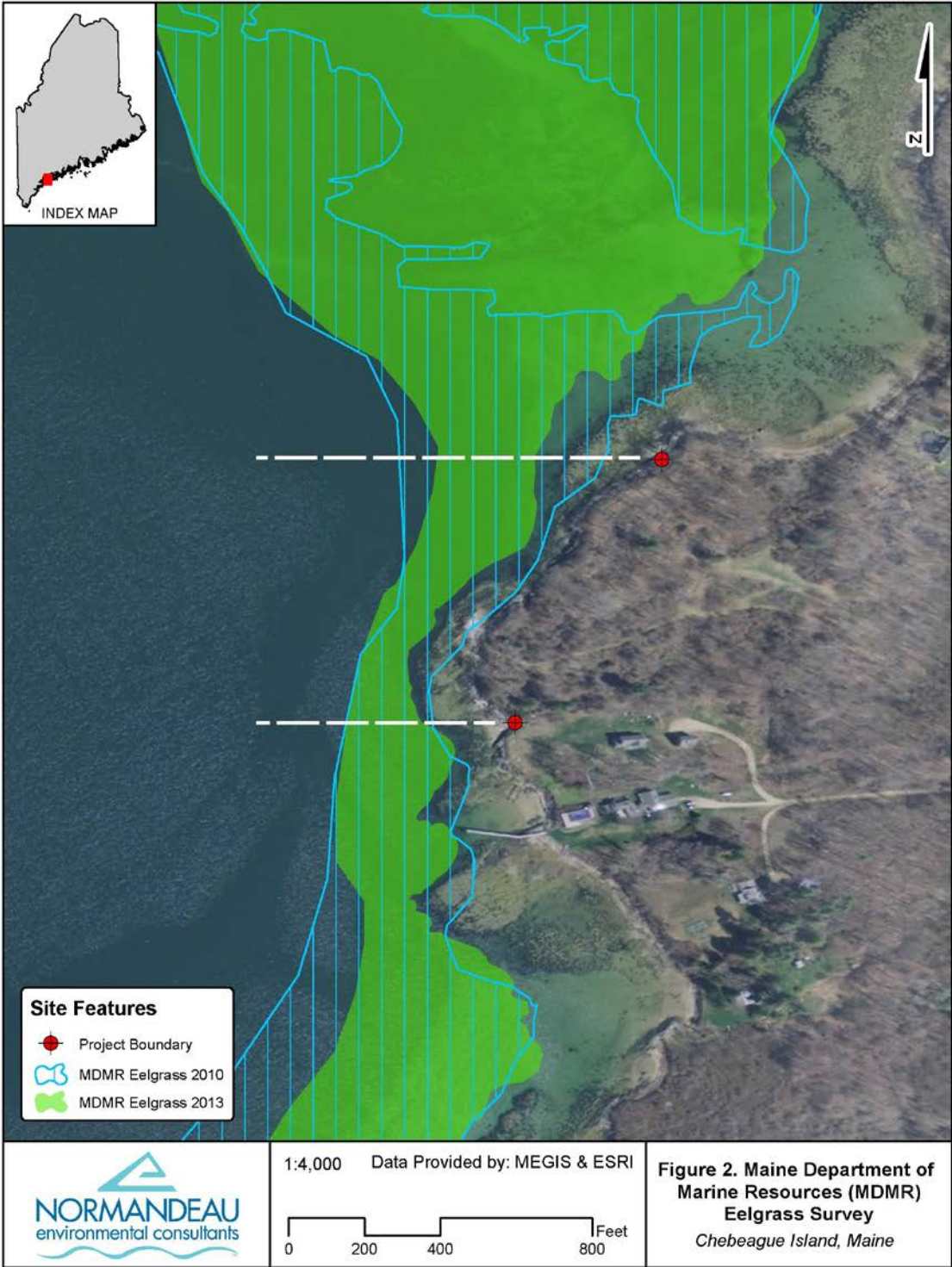
Video recordings for the Chebeague Island survey were made with a SeaViewer® underwater camera with a topside LCD viewer, GPS overlay, with a digital video recorder using SD cards. This camera was attached to a weighted and balanced frame that was towed alongside the vessel at the lowest speed possible ( $\leq 0.25$  knots) providing optimal viewing of the substrate. Speed and direction were adjusted as needed to accommodate for drift caused by wind and currents. The Normandeau field biologists monitored the video and adjusted the height of the camera off the seafloor, as depth and terrain varied, to maintain good visibility.

The camera was towed across the project area in a zigzag pattern to catch the inner (shallow) and outer (deep) boundaries of the eelgrass beds, as well as any patches or bare spots within the beds. Multiple passes were made to obtain reasonable coverage of the project area and GPS coordinates were recorded at each boundary point. Boundaries were based on percent cover as described in the Tier I Guidance [e.g. sparse (1-10% cover), low (11-25% cover), moderate (26-50% cover), and high (>50% cover)] and were located where coverage was at least 1-10%. Eelgrass bed boundaries are shown in Figure 1.

## **Results**

Eelgrass was observed within, and beyond, the project limits (Figure 1) from the low intertidal into the subtidal zone to depths greater than 20 feet. Densities of eelgrass within beds were generally moderate (26-50% cover) to high (>50% cover) and the boundaries of the beds were generally distinct with few exceptions. The exceptions included scattered patches of sparse densities within the nearly continuous bed, and areas that were greater than 26 feet deep. Eelgrass was observed growing in the cobble and boulder areas in the shallow subtidal as well as on the sandy and gravelly substrate that was prevalent in most areas.





The Maine Department of Marine Resources (MDMR) mapped eelgrass along most of the Island's shoreline in 2010 and in 2013 (Figure 2). The MDMR maps showed more extensive eelgrass beds north and south of the project area. Similar results were obtained during the survey conducted by Normandeau on October 7, 2014. The topography within a portion of the project area indicated a steeper gradient from the upper intertidal into the subtidal zone compared to the topography north and south of that area. The steeper gradient and rapidly increasing depths appeared to provide less suitable habitat for eelgrass than the adjacent more gradual gradients. Health of the plants was noted as good with some signs of seasonal senescence. The invasive tunicate *Botrylloides violaceus* was also noted as common throughout the surveyed area.

Sincerely,

**NORMANDEAU ASSOCIATES, INC.**



Project Biologist