



**Stantec**

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March 29, 2010  
File: 1054422

Environmental Services  
Public Works and Government Services Canada  
1713 Bedford Row  
Halifax, NS B3J 3C9

**Attention: Ms. Tamara McFarland, Environmental Services**

Dear Ms. McFarland:

**Reference: Eelgrass Bed Delineation at Pinkneys Point Small Craft Harbour, Yarmouth County, Nova Scotia**

## **Introduction**

In August of 2009, Stantec Consulting Ltd (Stantec) was retained by Public Works and Government Services Canada (PWGSC) to conduct an underwater marine benthic habitat survey (UMBHS) along three (3) transects in the footprint of the proposed construction of a new groyne and improvements/realignment to the existing breakwater at Pinkneys Point Small Craft Harbour (SCH), Yarmouth County, Nova Scotia. The harbour layout is shown on Figure 1, attached. Upon completion of the UMBHS, a large portion of Transect 2 was observed to consist of an eelgrass (*Zostera marina*) bed. On January 05, 2010 PWGSC requested a proposal from Stantec for delineation of the boundaries of the eelgrass bed within the cove in which the Project is planned. Following receipt of approval and an amended call up on January 12, 2010, the safety plan and mapping were prepared for the survey.

## **Materials and Methods**

On January 15, 2010, Stantec delineated the extent of the eelgrass bed at Pinkneys Point SCH. The delineation was performed by Canadian Standards Association and Diver Certification Board of Canada certified divers from Connor's Diving Services Limited using self contained underwater breathing apparatus (SCUBA). A Stantec aquatic biologist accompanied the dive team, adjusted in-field sampling protocol as required to obtain accurate results, collected GPS coordinates as described below and confirmed plant identification.

A map of the area north of the existing wharf structure was overlaid with a grid of dimensions approximating 25m x 25m. At each grid intersection the diver dove from the surface to the substrate and returned with an estimated percent coverage of eelgrass. At several locations an eelgrass shoot was brought to surface to ensure proper identification of species. The Connors boat crew manoeuvred the safety boat over the centre of the grid once the diver surfaced so that the GPS point could be collected. At locations where eelgrass was present, a waypoint was taken from a Garmin 60CSx which is a handheld WAAS enabled GPS with the point averaging function enabled (NAD 83 datum). Where the eelgrass bed was more complex, the grid was reduced, resulting in a

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greater number of waypoints taken. From these points, an outline of the eelgrass bed was determined. These methods were chosen by the aquatic specialist for the delineation of the eelgrass bed to best compensate for poor water clarity (visibility in the 10 - 25 cm range) and minimal depth (4 - 22 ft.).

In addition to determining the extent of the eelgrass bed, eelgrass abundance within the proposed wharf footprint was estimated based on the findings within three quadrats. Three 100 cm<sup>2</sup> quadrats were created and positioned on the substrate. The eelgrass shoots were then counted. This procedure was performed in triplicate at three separate areas. Following the grid survey and abundance estimate, the diver was towed on the surface at low tide around the perimeter of the harbour as well as in a grid pattern, to delineate the outer edge of the grass bed. The boundaries of the eelgrass bed including the three points measured for abundance are presented on Figure 1. Coordinates of the eelgrass bed boundaries and the locations of the abundance measurements are included in Table 1.

**Table 1 Eel Grass Bed Boundary – Survey Point Coordinates**

<b>Survey Point</b>	<b>Easting NAD 83 Zone 20T</b>	<b>Northing NAD 83 Zone 20T</b>	<b>Latitude</b>	<b>Longitude</b>
<b>SP1</b>	254137	4844178	43.70990365	-66.05170604
<b>SP2</b>	254116	4844060	43.7088349	-66.0519114
<b>SP3</b>	254168	4843858	43.70703218	-66.05117672
<b>SP4</b>	254147	4843752	43.70607588	-66.05138811
<b>SP5</b>	254123	4843656	43.70519855	-66.05164091
<b>SP6</b>	254139	4843616	43.70484374	-66.05142541
<b>SP7</b>	254117	4843597	43.70466999	-66.05168835
<b>SP8</b>	253905	4843674	43.70529142	-66.05435061
<b>Quadrat 1</b>	253955	4843605	43.70280416	-66.05222566
<b>Quadrat 2</b>	254029	4843649	43.70305633	-66.05168733
<b>Quadrat 3</b>	254079	4843617	43.70305633	-66.05168733

**Results**

The majority of the cove north of Pinkneys Point Harbour is a continuous eelgrass bed. The landward (west and north) edge of the eelgrass bed is strongly tied to the substrate, eelgrass begins in the lower intertidal zone where large cobble transitions to silt and sand. To the east, the extent of the eelgrass habitat is limited by rocky substrate created by erosion from tidal currents passing along the east of the breakwater. The southern boundary is limited by the Pinkneys Point Harbour wharf. The estimated area of the eelgrass bed within the survey area is approximately 10.5 ha (see Figure 1). Eelgrass abundance within the projected wharf footprint varies between 400 and 1,100 shoots/m<sup>2</sup>, with the southern part of the eelgrass bed having the highest density, and then thinning out to the east. The lowest density occurs in the upper subtidal zone.

**Summary**

This report presents the results of the eelgrass bed delineation and an estimation of eelgrass abundance within the proposed wharf footprint north of Pinkneys Point SCH in Yarmouth County, Nova Scotia.

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This report has been prepared on behalf of, and for the exclusive use of, PWGSC. The data represent the conditions in the subject area at the time of the survey. Results can only be extrapolated to an undefined limited area surrounding the survey location. Stantec certifies that, to the best of our knowledge, the information presented is accurate. We trust this letter contains all of the information required at this time and are available at your convenience should you have any questions.

Sincerely,

**STANTEC CONSULTING LTD**

*ORIGINAL SIGNED BY*

Kelley Fraser, MES  
Project Manager  
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Attachment: Figure 1



**ATTACHMENT A**  
**Eel Grass Delineation**



Legend

Eel Grass Survey (2010)

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Quadrat Location

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Eel Grass Survey Edge (Stantec 2010)

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Assumed Eel Grass Coverage (Approx. 10.5 ha)

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Transect Coordinate Location

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Transect Lines (UBHS Survey, Aug 2009)

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Base Data

Project No - 121510240

050100

Meters



