

## Memorandum

To	CPRA and Weeks Marine	Page	1
CC			
Subject	Grand Liard - Measurement for Payment August 2015 Invoice (Payment #9) – Marsh Creation Hydraulic Dredging East Borrow Area		
From	AECOM		
Date	August 25, 2015	Project Number	60315916

### 1. Introduction

This memorandum details calculation of hydraulic dredge material removed for payment from East Borrow Area for Weeks Marine (Weeks) August 2015 Invoice #9. Dredged volume was calculated by finding the difference between the pre-construction and post construction surveys (i.e., point files) provided by Weeks.

The pre-construction survey was completed by Hydroterra on July 1, 2015 prior to restarting dredging operations. The post construction survey was completed by Hydroterra on August 11, 2015. AECOM used the point files to create a pre and post construction triangular irregular networks (TINs). Dredged volume was calculated as the volume difference between the two TINs.

### 2. Dredge Volume

Dredge volume for payment calculated the volume of sediment removed from within the design template. Template assumptions include all material dredged within:

- All dredge cuts.
- Limit of dredging (i.e., dredge elevation not below -34 feet NAVD88).
- Limit of Pay (i.e., bottom of cut within limit of equipment and top of cut within 100 feet of limit of equipment).

Dredge volume removed from the East Borrow Area was calculated to be 678,307 cubic yards (CY). The total dredged volume for payment is currently 2,819,874 CY. Table 1 shows the total volume of material dredged from the East Borrow Area for payment to date.

**Table 1: Total Dredge Volume - Marsh Creation Hydraulic Dredging East Borrow Area**

Invoice	Date	Volume for Payment (CY)	Dredge Area Cut(s)
Application for Payment #6	April 11, 2015	688,698	8, 9, and 10
Application for Payment #7	April 30, 2015	944,412	4, 5, and 10
Application for Payment #8	May 31, 2015	508,457	1, 2, 3, 4, and 5
Application for Payment #9	August 14, 2015	678,307	All Cuts
<b>Total</b>	-	<b>2,819,874</b>	-