

**Sunset Beach Pre-Dredge Analysis  
Material Placement Island Evaluation  
July 31, 2017**

The following provides a general site condition summary of the islands under consideration for placement of non-compatible spoil associated with the dredging of Jinks Creek, Mary's & Turtle Creek, the Bay Area, the Feeder Canal, & the finger canals. The descriptions also include a construction estimate for preparing the islands for use. The narrative references the placement Islands by USACE designations as shown in Figure 1, and includes island's 311, 310, and 308.



**Figure 1. USACE Placement Island Designations**

**Placement Island 311**

Placement Island 311 provides the optimal location for material placement from Mary's and Turtle Creek and generally matches the 'pump' distance required for Island 310 for all remaining project features. However, Island 311 provides approximately half of the available fill area as the other islands under consideration. As such, the fill material will require the highest placement elevations at Island 311 and therefore, the dike will need to be the tallest. The current dike provides an estimated average storage capacity of approximately 3 ft with a perimeter of 3,500 ft. Some holes or breaks in the dike system were observed during the site visits, and others may exist as the complete dike system was not inspected. However, for estimating purposes an existing three (3) ft. vertical storage capacity seems reasonable based on the observations made. Island 311 would require some brush and debris removal. The center of the island contains approx. head high brush and small trees. Along the perimeter the vegetation cover changes to trees 12 – 25 ft tall. The eastern and western island terminus contains approx. 450 and 500 ft respectively of tall

vegetation, respectively. Likewise, the northern and southern island boundaries offer an approx. 40 ft boundary of tall vegetation (12 – 25 ft trees and brush). Figure 2 shows the placement island in planview.



**Figure 2. USACE Placement Island 311(May 2017)**

Based on the current material volume estimates for the overall project, approximately 90,000 CY may need to be placed within the disposal island confines. To accomplish this an estimated 3,000 CY would be needed to raise the existing dike approximately 5 ft. This would bring the vertical storage capacity to 8 ft and would provide an estimated 2 ft of freeboard for temporary storage of dredge slurry. The material most likely could be scraped from the existing soils within Island 311, however a cost would be associated with this work. In addition, the island would require an outfall structure and effluent pipe. Table 1 below provides a summary of the estimated work required for material placement on Island 311.

**Table 1. Estimated Work Effort Required for Island 311**

Item	Estimated Quantity	Estimated Cost	Reason for Work
Site Clearing	10 Acre	\$22,000	Remove vegetation within material placement area to allow site drainage.
Site Grading	3,000 CY	\$45,000	Build up existing dike for storage capacity (90,000 CY)
Outfall Structure & Pipe	1 LS	\$27,000	Provide drainage for return waters from dredge slurry and capture non-compatible sediment
<b>TOTAL</b>		\$94,000	Estimated cost to prepare Island 311 for material placement

Note: Costs include 25% contingency and all mark-ups.

**The following Pictures show the existing conditions of Island 311:**



**Photo 1** – Dike failure at apparent location for outfall structure. (July 2017)



**Photo 2** – Vegetation within the center of Island 311. (July 2017)



**Photo 3** – Vegetation along the eastern island terminus. (July 2017)



**Photo 4** – Vegetation looking east from western island terminus. (July 2017)

### **Placement Island 310**

Placement Island 310 provides a reasonable comparison to island 311 for pump distance. Material from Mary's Creek will have a longer pump distance. However the extra distance should not be significant considering the pump distance for the remaining dredge areas. Also island 310 provides approximately double the fill area compared to island 311. Figure 3 shows Island 310, which consists of an approximate 22 acre fill site enclosed by an approximate 6,800 ft perimeter dike.



**Figure 3. USACE Placement Island 310(May 2017)**

The area available for material placement suggests the dike would not have to be improved as much to handle the dredge material. The vertical storage capacity needed on Island 310 equals approximately 3 feet. The existing dike height registered approximately 5 ft. for an island average. Thus, only minimal work would be expected in order to prepare the dike and still allow approximately 2 ft of freeboard for controlling the dredge slurry. (The dike system was not completely inspected, and some adjustments may be necessary for construction. However, the conditions observed provide a general overview for estimating purposes.)

Island 310 also contains an existing outfall structure, however, the discharge pipeline resides in a dilapidated condition and will need replacement. Heavy vegetation and brush cover most if not all of the island. The vegetation prevented a detailed inspection of the site with the available equipment. Vegetation clearing and removal would most likely entail the largest cost and obstacle for preparing the island for use. The debris would most likely need to be removed from the island in order for vector control and for proper drainage of the dredge effluent. Because Island 310 provides an extended surface area, there may be a potential to only use a portion or segment of the island. This potential may help to reduce costs; however, the estimate for construction assumes the full island will be used. Table 2 below provides a summary estimate of the effort and costs required to prepare Island 310 for material placement.

**Table 1. Estimated Work Effort Required for Island 310**

Item	Estimated Quantity	Estimated Cost	Reason for Work
Site Clearing	22 Acre	\$90,000	Remove vegetation within material placement area to allow site drainage.
Site Grading	1,000 CY	\$15,000	Minimal improvements for existing dike to provide storage capacity (90,000 CY).
Outfall Pipe	1 LS	\$22,000	Provide drainage for return waters from dredge slurry and capture non-compatible sediment.
<b>TOTAL</b>		<b>\$127,000</b>	Estimated cost to prepare Island 310 for material placement

Note: Costs include 25% contingency and all mark-ups.

**The following Pictures show the existing conditions of Island 310:**



**Photo 5** – Outfall structure for dredge slurry. (May 2017)



**Photo 6:** Dilapidated outfall pipe at Island 310. (May 2017)



**Photo 7:** Heavy vegetation (trees in background) coverage for Island 310. (July 2017)

### **Placement Island 308**

Due to the pump distance and current condition of Island 308, the site is not considered for material placement. The pump distance for the island would extend approximately 1 mile beyond Island 310. In addition, the island would require a significant effort to build up the dike system and excavate the discharge structure. (A previous project appears to have buried the outfall structure.) Although the Island has been removed from consideration, Figure 3 and the photographs below show the condition of the island.



**Figure 4. USACE Placement Island 308(May 2017)**



**Photo 8:** Buried outfall structure on Island 308. (May 2017)



**Photo 9:** Internal area of Island 308. (May 2017)



**Photo 10:** Vegetation cover typical of Island 308's eastern terminus. (July 2017)