**PROJECT MEMORANDUM**

**TO:** Ms. Ellen Posivach, Port Richey City Manager

**FROM:** Joe Wagner, P.E., Taylor Engineering, Inc.

**SUBJECT:** Preliminary Opinion of Probable Cost, North Bay Boulevard Dredging, Port Richey, FL

**DATE:** November 20, 2009

In accordance with our scope of work for Work Order #4, we have prepared a preliminary opinion of probable cost for the North Bay Boulevard dredging project (Channels 11, 12, 13, 23, and 30). This dredging project would connect the North Bay Boulevard channels to Miller's Bayou and the Pithlachascotee River to provide boaters with access to the Gulf of Mexico. We have analyzed the cost of two conceptual design options to provide this connection.

Our preliminary opinion of probable cost includes all expected costs for design and construction-phase engineering, environmental permits, special assessment district establishment (provided by GSG, subconsultant to Taylor Engineering), dredging construction, environmental mitigation, and final permit certification. The following paragraphs describe the two conceptual design options, our review of available project data, data collection, and methods for calculating estimated project quantities and costs, and summarize the cost range associated with this project.

The first option (Attachment A) includes construction of a bridge at the intersection of Channel 23 and Bay Boulevard and another bridge near the intersection of Betty Street and Green Street. The Bay Boulevard Bridge will connect Channel 24 (Miller's Bayou dredging project) to Channel 23, and the Betty Street Bridge will connect Channel 30 to Channel 11. Channel 30 will follow a northeasterly route for approximately 570 feet and require the removal of approximately 900 cubic yards of soil and limestone. Taylor Engineering estimates that the quantity of limestone located within the dredging template ranges from 2,100 to 2,800 cubic yards (30 to 40%) with a maximum total project dredging volume of approximately 6,900 cubic yards (-5 ft project depth and 1-ft of allowable overdepth dredging).

The second option (Attachment B) includes construction of the Bay Boulevard Bridge only. Furthermore, this option relocates Channel 30 to the approximate midpoint of Channel 23 and re-routes Channel 30 in a south to north direction for approximately 1,420 feet. Channel 30 then turns 90 degrees to the east for approximately 830 feet until it meets the intersection of Channels 11 and 12. This option will require the

removal of approximately 3,400 cubic yards of soil and limestone from Channel 30. Taylor Engineering estimates that the quantity of limestone located within the dredging template ranges from 3,300 to 4,300 cubic yards (35 to 45%) with a maximum total project dredging volume of approximately 9,500 cubic yards (-5 ft project depth and 1-ft of allowable overdepth dredging).

We reviewed all available data from the City of Port Richey to characterize the existing conditions in the project area, most notably the geotechnical conditions within the project channels (limited to Channels 11, 12, and 13). We retained Ardaman & Associates to perform a geotechnical exploration (one 55-foot deep Standard Penetration Test boring) within the vicinity of the Bay Boulevard Bridge to assess the anticipated foundation conditions for bridge construction. The boring encountered 3 feet of water at the time of drilling, followed by approximately 1.5 feet of sand with silt and shell fragments. Beyond this layer, the boring encountered an approximately 6-foot layer of loose to medium dense highly weathered limestone, followed by an approximately 5.5-foot layer of greenish-gray clay, and then encountered weathered limestone to the bottom of the boring. Please refer to *Geotechnical Engineering Services Bay Boulevard Bridge Evaluation* (Ardaman & Associates, October 27, 2009) for additional information. Our cost estimate for both the Bay Boulevard and Betty Street Bridges assumes foundation conditions consistent with the Ardaman & Associates boring throughout the project area.

Taylor Engineering reviewed the surface analysis provided by the city from previous engineering firms to estimate the dredging volumes within Channels 11 and 13. We then calculated the dredging volume per unit length of channel for Channels 11 and 13. We multiplied this ratio by the length of Channels 12, 23, and 30 to estimate their respective dredging volumes. We used the geotechnical data from Channels 11, 12, and 13, and the Ardaman & Associates geotechnical data, to estimate the volume of limestone within the dredging channels. We researched dredging and ancillary unit costs, adjusted for the project location and current market conditions, and obtained cost information from Florida-based contractors and material suppliers. In addition, we estimated fees for professional engineering and environmental services associated with the North Bay Boulevard dredging project in this opinion of cost.

Based on the data collection, construction quantity, and cost methods previously described, our opinion of probable cost for the North Bay Boulevard dredging project first option ranges from $3.3M to $4.0M for a mechanical dredging operation. This option includes the construction of a bridge at the intersection of Channel 23 and Bay Boulevard and another bridge near the intersection of Betty Street and Green Street.

Based on the data collection, construction quantity, and cost methods previously described, our opinion of probable cost for the North Bay Boulevard dredging project second option ranges from $2.4M to $3.0M for a mechanical dredging operation. This option includes the construction of the Bay Boulevard Bridge only. The City of Port Richey should use these opinions of probable cost for planning purposes only; actual construction costs may vary depending on prevailing market conditions at the time of dredging.

Notably, Taylor Engineering based this opinion of probable cost on the use of a specific dredged material management area (DMMA). If the city chooses to pursue an alternative DMMA, the opinion of probable cost will vary based on the differential cost of offloading, dewatering, and final transportation of dredged material from the North Bay Boulevard channels to a final disposal location.