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Project/File:	Canal Maintenance Study – Phase 1 Hydrographic Data Collection and Volumes Analysis	Date:	August 18, 2025

Reference: Task 103 - Feasibility Memo

1 Project Overview

The objective of this analysis is to provide the Hernando County Aquatic Services and Waterways Department with an assessment on the current bathymetric conditions of selected residential navigable canals in Hernando County, FL. This assessment is used to develop a preliminary estimate of the level of effort needed to dredge the canals and provide guidance on future steps needed to design, permit, and dredge.

2 Hydrographic Survey and Volumes Analysis

A multi-beam hydrographic survey was completed by Morgan and Eklund Inc. in March 2025 and provided bathymetric data for six areas of residential canals located in Hernando County. The bathymetric data is displayed in the Hernando County - Volumes Analysis Plan Set on sheets C-101 through C-137, Existing Conditions.

Stantec developed dredge boundaries for the canals in each subarea, accommodating the natural channel width and man-made structures, while observing a 10 ft buffer from docks and a 20 ft buffer from the terminus of each canal. This variable dredge template maximizes channel width while accommodating the site-specific restraints.

The dredge template extends down to a depth of -5 feet Mean Low Water (MLW), which is the standard state permitting dredge depth, and has side slope ratios of 3:1 horizontal to vertical. The MLW elevation was calculated using the NOAA Tides and Currents Vertical Datum Transformation tool. A volumes analysis was completed for each subarea comparing the existing bathymetric data and the proposed dredge template, which calculated the sediment removal depth and material volumes within the proposed dredge boundaries. These depths and volumes can be found on sheets C-201 through C-237, Sediment Removal Thickness.

Two sample cross-sections are provided for each subarea, outlining the existing conditions, proposed dredge template, and the amount of sediment removed. The cross-sections can be found on sheets C-301 and C-302, Cross Sections.

3 Findings

Based on the proposed dredge template described in Section 2, Stantec has calculated the total amount of volume to be removed from each waterway if dredging were to occur to a depth of -5 ft MLW. Table 1 below provides a summary of these volumes in cubic yards (CY).

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Table 1: Dredge Volumes and Average Canal Depth

Subarea	Volume (CY) Dredging to -5 ft MLW	Average Waterway Depth (Existing, ft)
1	18,850	-11.01
2	49,991	-3.31
3	6,414	-3.80
4	5,955	-2.02
5	11,337	-2.04
6	10,643	-2.50
Total	103,190	-

4 Conceptual Construction Costs

Stantec reviewed past purchase orders and recent bids on similar projects and used industry knowledge to provide the County with conceptual level construction cost estimates for each subarea. These approximate costs are shown in Table 2 below and provide a low (\$135 per CY) and high (\$210 per CY) estimate based on the volume of sediment within the proposed dredge template. Note: these costs will change based on future work and do not account for currently unknown project components, such as seagrass impacts, sediment characteristics, staging and disposal locations, and haul distances.

The County plans on dredging on a phased or canal-by-canal basis; total costs presented below are for planning purposes for future construction efforts.

**Table 2: Conceptual Level Engineer's Opinion of Probable Costs
for Dredging to -5 ft MLW by Subarea**

Subarea	Volume (CY) Dredging to -5 ft MLW	Dredging Cost (Low): \$135/CY	Dredging Cost (High): \$210/CY
1	18,850	\$2,544,750	\$3,958,500
2	49,991	\$6,748,785	\$10,498,110
3	6,414	\$865,890	\$1,346,940
4	5,955	\$803,925	\$1,250,550
5	11,337	\$1,530,495	\$2,380,770
6	10,643	\$1,436,805	\$2,235,030
Total	103,190	\$13,930,650	\$21,669,900

5 Next Steps

Should Hernando County decide to pursue canal dredging, there are several additional steps to be taken prior to construction. The following list provides typical dredging project components that are needed to assess, design, permit, and construct in Florida:

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- Data Collection
- Design
- Environmental Permitting
- Bidding Services/Contractor Procurement

These project components will be further detailed in the next sections.

5.1 Data Collection

The bathymetric survey is just one component of the field data needed to design and permit canal dredging. Environmental assessments of the canals will need to be conducted, including seagrass surveys, benthic surveys, subsurface sediment analyses, and other submerged resource surveys. A seagrass survey dated within a year of the permit applications must occur within the Florida seagrass survey window of June 1st through September 30th. Additionally, a benthic survey will be required to investigate the presence of oysters within the project area. Federal (United States Fish and Wildlife Service) and state (Florida Fish and Wildlife Conservation Commission) consultations for protected species will also be required for permitting.

For dredged sediment disposal or reuse, a subsurface sediment analysis, typically in the form of vibracores and sediment sampling, is required for permitting. The sediment analysis will provide information on any harmful material in the dredged sediment and will determine how the sediment can be reused or where it can be disposed. The geotechnical investigation will also provide the grain size and type of sediment in the dredge area, which will help in the determination of dredging equipment needed and how, or if, the sediment can be reused.

5.2 Design

After field data collection, design can begin. The first step in dredge design is a set of permit level plans, often referred to as 60% design plans, that can be submitted to the permitting agencies. Included in these designs are plan views of the existing conditions, displaying the bathymetric and environmental surveys; plan views of the proposed dredge boundaries; plan views of the sediment removal thickness; cross sectional views of the dredge template at regular intervals showing the material to be removed; plan views of staging, access, dewatering (if applicable), and disposal locations; and details for erosion and sediment control. Along with the permitting plans, a 60% level Engineer's Opinion of Probable Cost would be prepared to provide the County with a construction cost estimate of the dredge efforts.

Part of the design process is to identify the dredging methods that would best suit the project sites, depending on the dredged sediment type and the waterway access. If hydraulic dredging is selected as the preferred method, then dewatering is necessary. The dewatering process involves separating the water from the dredged material, allowing the sediment to dry prior to transport to the final disposal location. The dewatering site design is dependent on site conditions, including space availability, proximity to wetlands, existing ground hydrology, topography, and pipeline locations.

An additional component of design is the staging area and disposal of sediment. To determine which area(s) would be most appropriate, potential staging areas are analyzed for barge/equipment access, potential environmental impacts, and impacts to the surrounding communities and infrastructure. The disposal location will depend on the type of material dredged, and whether that material contains hazardous substances, as determined by the subsurface sediment analysis.

After the permitting process, the design would move to 90% (draft) and 100% (final) Construction Plans. These plan sets would include components from the permitting plan set, as well as any revisions or additions requested by permitting agencies, and additional construction information. Final 100%

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Construction Plans would be signed and sealed by a Professional Engineer registered in the State of Florida with coastal engineering and dredging experience. Accompanying the Construction Plans would be Technical Specifications and the final Engineer's Opinion of Probable Cost.

5.3 Environmental Permitting

Federal permits, including the United States Army Corps of Engineers (USACE) Individual Permit (IP) and state permits, including either the Florida Department of Environmental Protection (FDEP) or the local water management district (Southwest Florida Water Management District, SWFWMD) Environmental Resource Permit (ERP) will be required to perform dredge work.

Typically, a pre-application meeting is held with the agencies before design to introduce the project and to identify the data collection and analyses needed to permit the dredge work, as well as discuss any possible design restrictions. Having this meeting with the agencies prior to permit submittals allows for identification of potential permitting challenges and ensures that the project includes all the necessary information required.

Permit applications would be submitted following completion of the permitting plan set. Currently, state permitting is approximately 9 to 12+ months and federal permitting is approximately 18 to 24+ months. Included in this permitting timeline is the Request for Additional Information (RAI) process where agencies may require additional data collection, request responses to questions related to design and the overall project, or request design changes. Additional delays may be encountered if the submerged resource surveys indicate the presence of protected species such as seagrass or oysters, which require mitigation to minimize impacts to existing resources.

A Sovereign Submerged Lands (SSL) lease will most likely be required. A SSL lease permit would require a legal sketch of the SSL boundary and a fee paid to the State of Florida, the amount of which is determined by the State.

5.4 Bidding Services/Contractor Procurement

The last step in the project planning process is to put the project out to bid and procure a contractor. The bid advertisement would be coordinated between the design consultant and the County's Procurement Department to solicit contractor bids and qualifications for the proposed dredging. Bid documents include the signed & sealed construction drawings, contract documents, technical specifications, and special provisions. A Pre-Bid Conference would be arranged to answer prospective contractor inquiries or transcribe contractor inquiries for subsequent research.

During the bidding period, contractors may submit written inquiries seeking interpretation of the bid documents. The Engineer of Record (EOR) would typically assist with the preparation of bid addenda(s) as appropriate by providing technical response to items. Such items include changes that may be warranted to the drawings, technical specifications, or other construction-related issues as appropriate. The EOR would obtain copies of sealed bids from the County and evaluate and provide a written recommendation for award to the County based on a review of the submitted bids. The EOR's recommendation of award shall demonstrate that, in their opinion, the bid is responsive, the Contractor understands the requirements of the Construction Contract, and the Contractor has the experience, manpower, equipment, and financial capability to perform.

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6 Next Steps – Estimated Costs

To assist the County with a planning budget for the Next Steps as presented in Section 5, Stantec used recent projects and field collection efforts to estimate the cost of design, permitting, data collection, and bidding, summarized in Table 5 below. The estimated costs represent the effort to collect data, design, permit, and bid all six subareas.

Table 3: Next Steps – Estimated Cost

Next Step	Unit Cost (Low)	Unit Cost (High)
Design	\$75,000	\$150,000
Permitting	\$50,000	\$100,000
Data Collection – Benthic/Seagrass	\$75,000	\$200,000
Data Collection – Geotech	\$75,000	\$150,000
Bidding/Contractor Procurement	\$25,000	\$50,000
Total	\$300,000	\$650,000

The low unit costs in Table 5 are an estimate based on current pricing for consulting services. The high unit costs are estimates of the next steps, accounting for inflation, should the County decide to defer these services to a later time. These costs assume all canals are to be permitted. Specific tasks could vary greatly depending on what canals are ultimately chosen to be permitted.

7 SUMMARY

Stantec completed a volumes analysis of select navigable residential canals in Hernando County. The dredge volume for each of six subareas, along with the estimated cost to dredge, is intended to assist the County with future dredging decisions. Stantec has also provided a description and cost estimate to summarize the level of effort needed to design, permit, and bid each subarea.

Respectfully,

STANTEC CONSULTING SERVICES INC.



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